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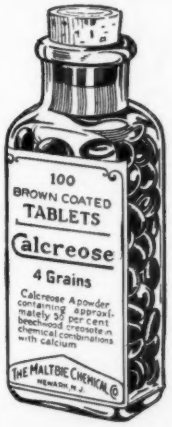

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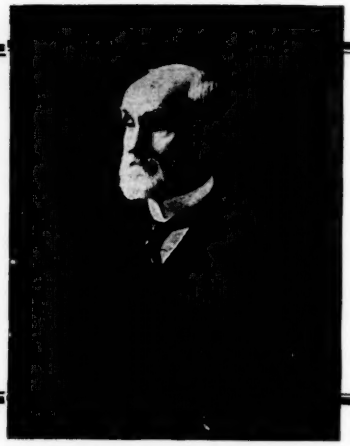

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Original Communications

ADOMINAL PREGNANCY.*

By J. BOLLING JONES, M. D., Petersburg, Va.

Though rare, with more frequent reports from year to year of cases of abdominal pregnancy, successfully handled both as to mother and child, the subject certainly demands some consideration at the hands of surgeons and obstetricians. It is evidently wise that all such cases be reported with results. The cases being rare, one can only be safely guided by the experience of others as well as his own, both as to diagnosis and treatment. I will not attempt to enumerate the number of cases that have occurred with living children in recent years. Horsley, in 1912, found in reporting a successful case of his own 138 babies living at time of operation. Forty-six of these had occurred in the previous fifteen years against 92 prior to 1897. Of the last 46 reported, 19 were still doing well at the time the report was made, and in many instances the children were over one year old. Eight were deformed and, as a rule, died early, 19 showed normal development but died in a few hours from various causes, such as prematurity, convulsions, bad surroundings, or some bad general conditions of the mother. No doubt with an improved diagnostic acumen and surgical technique, as we have today, a search of the literature of recent years would show a larger number of successful results: not that any more cases of abdominal pregnancy occur. The reverse should be true. With the exception of a few instances all abdominal pregnancies are of the secondary variety. There is usually a definite history of rupture in the early months. Most patients today are seen by some one capable of recognizing the true condition at the time, proper advice given, operation promptly done and no chance for abdominal pregnancy to develop. These were the facts in the living baby I am reporting except that the mother refused the early operation. In a series of twenty cases of ruptured ectopic, all successfully operated on by me, there was another abdominal pregnancy of about four and one-half months. Who can tell what would have happened in the other eighteen had they not been operated on early, some just before, the others soon after rupture. I certainly would not advise any woman to take such a hazardous risk, however. The four and half months pregnancy was a poor colored woman. While there was a history of attacks of severe pain and faintness on former occasions, she had been seen by no physician until the day on which she was operated.

Diagnosis may be extremely difficult or very easy, depending upon the stage of development, Here, as elsewhere, mistakes will be seldom made if we have it in mind. Discrimination must be made between this condition and any intra-abdominal growth.

Pregnancy of this type will produce the same general picture as one perfectly normal. The menstrual history is particularly suggestive. It may be absent, irregular, scanty or too prolonged and profuse, with the passage of tissue, a history of at least much pelvic discomfort, and usually one or more periodic attacks of extreme pain attended by nausea and faintness of greater or less severity. With this early history we find, on physical examination, conditions depending upon the stage of development of the pregnancy. In the early months the abdomen will be enlarged below to right or left, and of smooth contour. The growth naturally will be higher and more in median line with the advance of pregnancy. At or near term there is little difference in its appearance from the normal. Uterine souffle occurs very much earlier than in a normal pregnancy, and will be a distinct guide long before the foetal heart sounds and foetal

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

movements are felt; once heard and felt, foetal heart sounds and foetal movements are more distinct than in the normal cases. On vaginal examination a mass will be found high up to the right or left, with uterus separate, somewhat enlarged, and pressed down to the opposite side. The findings in the pelvis will remain the same throughout. In the early months differential diagnosis is more difficult. The peculiar menstrual history, location of the growth, empty uterus, general pelvic discomfort, early appearance of the uterine souffle, would be guiding points. The main point in the early stages is, to my mind, not to misinterpret signs of rupture. This was my experience in the four and half months' pregnancy to which I have already referred. A diagnosis of ectopic with repeated ruptures was made; whereas at operation there was no blood in the abdomen, the foetus was in a perfectly formed glistening sac which ruptured when attempt at removal was made. The placenta was attached to the lateral wall of pelvis, underneath the broad ligament. Its vessels were ligated, and removal was without much difficulty. Remembering this mistake, I was the better able to handle the successful case now being reported. In the later months, if the child be viable, differential diagnosis is easy.

With the foetus dead, the X-ray would be an absolute guide. When in doubt, these cases should be watched and studied in the interest of both mother and child.

Treatment will depend on the stage of development, whether the foetus is dead or alive, and the general and local condition of the patient. The operative danger arises mainly in handling the placenta, and this is proportionate to the location and relatively vital structures to which it is attached, and not necessarily to the term of pregnancy. It is also well recognized that, in case of the foetus dying at any stage, changes immediately take place in the blood supply to the placenta, making the matter of its removal very much easier and safer; particularly if a period of a few weeks is allowed to elapse before the operation is undertaken. Consequently, in an advanced case, the foetus dead and the above changes having had time to occur, a section is indicated, removing the foetus, the placenta and membranes, with complete closure. With the child alive, or if recognized before time of viability, the mother's general condition good and local condition not alarming, other considerations arise. In my judgment, these infants deserve to be considered just as they would be in threatened abortion. It has been proved by Cragin, Horsley, and by the case I report, that they can be perfectly normal in every way. These patients should be kept under the strictest surveillance. It might be slightly safer for the mother than for the child, to operate early, but this is questionable. In my cases the one at eight and one-half months was operated on as safely as the one at four and one-half. When the pregnancy is advanced, the danger of hemorrhage from rupture as in the early months is practically nil. Should the sac rupture with escape of amniotic fluid in the abdominal cavity along with the foetus, to my mind the shock would not be proportionate to that of hemorrhage. Under these conditions, of course, operation should be immediate. I have not read of such an accident occurring late, if handled promptly, as being disastrous.

According to Beck's statistics the best time to operate in the interest of the child is the thirty-eighth week. This was the plan we adopted in the case we today report. The mother's condition was good up to that time.

The question next arises how best to handle the placenta with the active blood supply. This is left to the judgment of the operator. Beck proved by experiment with dogs that three-fifths of the human sterile placenta could be handled readily by the peritoneum. He has collected a series of twelve cases where the child was removed, the cord cut close to placenta, the latter with its membranes left *in situ*, the abdomen closed without drainage. The mortality was a little over 33% as against the next and usually adopted plan of procedure, that of marsupialization, which carries a mortality of 39 per cent. It has been suggested this is probably not a fair test, as probably in a good many of the cases of marsupialization the operator had possibly attempted removal and, having failed, the patient had to stand the effects of the hemorrhage in attempts at removal as well as the long continued suppuration that goes with this method.

When, in the judgment of the operator, the placenta by virtue of its attachment can be safely removed, this should be done. This plan was adopted in both of my cases, both recovering.

Patient of Dr. F. J. Wright, Petersburg, Va.

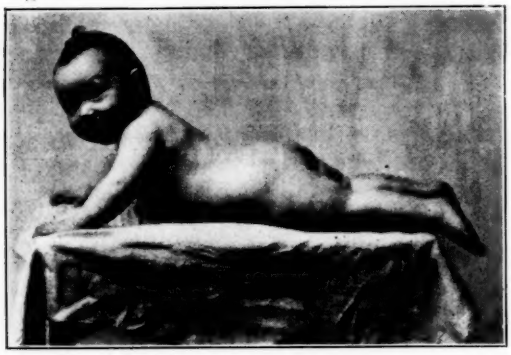
Mrs. W. H. C., white, age 29, married 11 years, two children, first born in 1912, still born. In 1913 had laparotomy, median incision, removing right tube, ovary and appendix. In 1915 last child was born, forceps delivery. Since that time health fairly good. Menstruation regular but varied in amount and discomfort. The last regular menstruation was March 17, 1921. Present illness begun April 12, 1921, with severe pain in the rectum, extending through to front of lower abdomen, and lasting about fifteen minutes. No nausea, vomiting or fainting. About two weeks later, while at stool, the same character of pain occurred, but more severe, lasting a little longer, causing a feeling of faintness but no vomiting. About May 1st, the third attack occurred, and she was seen by Dr. Wright. There was pain in rectum and lower abdomen, very severe and persistent, causing thirst, nausea, blindness, air hunger and syncope. She was then in bed constantly for five weeks. The patient missed the April period due the 17th. Early in May begun menstruating and continued till June 8th. During May she suffered with intermittent cramping pains in the abdomen. They also disappeared about June 8th. On May 26th case was first seen by me with Dr. Wright, who suspected ectopic. This opinion was confirmed, based upon the typical history already given and pelvic findings, namely, a fixed mass to left of uterus, soft and elastic. Uterus quite tender and soft. There was no temperature. Immediate operation was advised but refused. On June 7th she was seen by another physician who questioned any form of pregnancy. He advised curettement which she also refused. On July 24th, two months later, she was seen the second time with Dr. Wright. The patient's general condition was then good but she had noticed her abdomen enlarging on one side and was concerned about herself. The growth then occupied the lower left abdomen and could be outlined above easily. Uterine souffle was loudly audible over the tumor. Digitally it was shown that the left side of pelvis was completely filled with a soft fixed growth. The uterus was easily defined to right but fixed; somewhat enlarged. All of the patient's functions were being well performed and vital organs in good condition. The patient was advised that the opinion given her two months previously was correct; that nature had taken care of the situation to the extent of controlling hemorrhage, but that the foetus was alive and was growing. In view of the fact that her general condition was good, she was convenient to hospital care, and could be quickly handled in case of emergency, in the interest of the child we would await developments. I did not fear hemorrhage any further. She was from then on constantly under Dr. Wright's care; I saw her occasionally. Early in August, foetal movements were active and foetal heart could be heard.

On August 13th, patient had a severe fall. This was attended by marked abdominal pain, faintness and nausea. Fearing rupture, she was promptly sent to the hospital by Dr. Wright. When seen by me a little later, the picture did not look like shock from perforation but that from pain. Moreover, I remembered my first case referred to, where I made an error of judgment and consequently lost the baby. Her pulse was slow but of good volume. There was little anxiety in expression; considerable nausea; temperature normal; surface slightly cold, but soon responded to heat. There was extreme tenderness over the abdomen. Singularly, the foetal heart sound which had been distinct could not be found. The uterine souffle which had been extremely loud was very faint, there was extreme tenderness over the abdomen. What I feared was death of the foetus. The only drug administered was morphia to relieve pain. In 24 hours the patient's general condition improved, the foetal heart sounds were again distinct and souffle as pronounced as ever. She stayed in the hospital under observation twelve days and left in good condition.

From then on there was nothing unusual in behavior of the patient, only the necessary increasing enlargement of abdomen, the growth getting more in middle line, the increase in strength of foetal movements and heart soonds. We fixed the end of the 38th week to be about November 9th, taking this as a most propitious time for the child and as well for the mother. During these last weeks the case was properly safeguarded from an obstetrical standpoint.

Mrs. Cook entered the hospital November 8th and was prepared for laparotomy in the usual manner. Just prior to operation she was carefully gone over. Heart, lungs, blood pressure and kidneys were all normal; nutrition good; foetal heart sounds strong and move-

ments active. The tumor reached close to diaphragm, situated a little more to left of abdomen. On percussion, the entire left side was flat except an area of tympany extending from the left anterior superior spine upwards and over top of tumor. Otherwise, tympany only existed on extreme right in region of flank. Taken to operating room at 11:55 a. m., was back in room at 1:45 p. m. Time of operation one hour, thirty minutes. Anesthetic ether; anesthetist, Miss Spencer. Assistants in operation, Drs. F. J. Wright and F. Hinchman. The abdomen was opened and incision made through left rectus, extending from level of umbilicus to just above pubis. The left broad ligament was found spreading out over tumor as high as middle of incision. There were no adhesions at any point to abdominal wall, except small omental adhesion to old scar in middle line and independent of present condition. The placenta could be easily seen occupying the upper portion of sac and extending down on the left to the level of overlapping



Margaret Bolling Cook. Abdominal pregnancy baby, aged 11 months, 11 days.

broad ligament. On retracting abdominal wall to right, a clear thin portion of sac presented just under the middle line. Gauze padding was applied and the sac opened at this point. Amniotic fluid was abundant and apparently perfectly normal. The child was quickly extracted in perfect condition, in a few minutes' time crying lustily.

The cord was clamped and cut close to the placenta. On the removal of the child and amniotic fluid, the placenta immediately came down in easy access to field of operation. It was entirely arched over by the sigmoid, receiving its blood supply from the meso-sigmoid and left broad ligament. On picking up the sigmoid with the tissues now relaxed, it was found that ligatures could be placed between the two. Complete enucleation was determined and accomplished without much difficulty. The upper half of broad ligament was removed with its enormously distended vessels. A small portion of membrane was quite densely adherent to the large iliac vessels. Fearing hemorrhage from this source in its removal, this small portion of membranous tissue was ligated and left *in situ*. Otherwise, the entire placenta and membranes were removed. The hemorrhage was at times considerable but at no time alarming. The uterus was pressed down below and to the right and was considerably larger than normal. I made no attempt to demonstrate the tube on the affected side. The abdomen was closed without drainage. The patient left the table in good condition. The baby, a girl, weighed four and three-quarter pounds, and was in apparently perfect state of development. Post-operative treatment was the same as in any abdominal incision. Salines by hypodermoclysis were given on account of the fact that we did not care to interfere with rectum or sigmoid. There was considerable uterine bleeding beginning soon after operation. It was as if it were an excessive menstrual flow. Patient's recovery was uneventful except after four or five days she ran a low grade temperature that we were unable to account for. My impression is that it may have been due to a mesenteric phlebitis. The kidneys acted well and bowels moved well by enema. There was little secretion of milk which made it necessary to feed infant artifically. The patient left hospital November 26th, in ambulance, but was soon up and around. The mother today, 11 months and twenty-four days after, is in perfect condition. A report of Dr. Mason Romaine, pediatrician, shows the baby to be perfectly normal mentally and it is physically above the average in development.

Discussion.

Dr. W. E. Anderson, Farmville: I want to congratulate Dr. Jones on the beautiful outcome of his case.

It has always seemed strange to me, how much a woman's abdomen and reproductive organs can stand. I had a case similar to that of Dr. Jones, only the woman carried the child for twenty-two months. She was a very big, stout woman, and she came a long ways across rough country roads to consult me. She arrived in pretty good condition.

The abdomen was so very thoroughly distended that I could not make a very thorough examination. I thought at first that it was an abdominal tumor and decided that it was too big a case for me. I referred her to Dr. Stuart McGuire, of Rich-

mond. The second day she went over to Richmond, and made the trip in perfect comfort. I went down to the operation. The whole staff of the hospital examined her, and no two agreed as to what the trouble was. One said it was a cyst. I said that she had abdominal tumor, the size and proportions of which I could not say.

We made the operation, and the first thing that popped out was the foot of a large child. We extracted the child and it weighed ten pounds. The patient said that she had not menstruated for twenty-two months and had considered herself pregnant. She had had twelve children before this. This may account for this condition. The woman made a good recovery and has not reproduced again.

I have seen cases of abdominal pregnancy and rupture, but I have not known any of them to die, if handled carefully.

Dr. G. B. Byrd, Norfolk: Dr. Jones' case interested me because I have had some cases of abdominal pregnancy. I was not fortunate enough to get to see the patients until the sixth, ninth, tenth and eleventh months. Some of these were cases of abdominal pregnancy, some of extrauterine pregnancy. In the findings of these cases they give more or less the same history. They have been sterile until then, or they are rather late in reproducing, or they have had several years of sterility. All complained of pain in the pelvis, at one side or the other. Each was of the opinion that there was a possibility of her being pregnant.

In following up from time to time during the early months, I find that these patients do not enlarge as rapidly as you would expect them to at that stage. Each had a definite mass or tumor to be felt on one side or the other of the uterus. In the last three, after it was decided that the mass was increasing, they were advised to have an operation.

A patient I had gave a history of pregnancy, and she had been going to the doctor for two or three months, and had already engaged him to attend her in her confinement. I do not know whether he made a vaginal examination, but I assume that he examined the urine. About the eight and a half or ninth month, she had some pain in the pelvis, and sent for him, thinking herself in labor. He did not find any dilatation of the cervix, and told her that he did not think her in labor. That went on for perhaps a week. He saw her six times. The pain stopped and she was all right, although the tumor was still there.

When she was admitted to the hospital and I examined her, you could get a definite mass that felt like a baby, but was more freely palpable. We could not get any heart sounds. The operation was performed and the child weighed ten pounds and four ounces. The placenta was attached to the ovarium and came away easily. The child was in perfect condition. I fully believe that during her period of discomfort this woman had been in a position to have an abdominal operation performed.

Dr. M. P. Rucker, Richmond: I would like to ask that Dr. Jones say a few words in the description of the placenta and something about the length of the baby. His baby weighed four and one-half pounds. You would expect a larger baby at thirty-eight weeks. I would like to know whether he thinks it was the condition of the placenta or the interference with circulation that was responsible for the retarded growth of the baby.

Dr. George T. Myers, Norfolk: I think that abdominal pregnancy or extrauterine pregnancy requires all the skill of the obstetrician in making a diagnosis. Like a clap of thunder out of a clear sky are those cases in which this complication occurs in many cases.

I saw a woman about three months ago who was about the menopause; she had been menstruating regularly every twenty-eight days. At the time I saw her she had acute pain in the right side, no bleeding. I did not think that she had extrauterine pregnancy. It requires an astute diagnostician to recognize every case of tubal pregnancy before rupture. I diagnosed it as appendicitis. I decided to wait until the morning before operating. In the morning she was having extreme pain in the right side, and was passing a considerable amount of blood; this changed the original diagnosis. She was taken to the hospital and, when we opened the abdomen, we found it filled with blood, and a two-and-one-half months' foetus. We sewed the abdominal wound without drainage, and she made an uneventful recovery.

I had another case taken practically the same way. From a vaginal examination I could not find anything extraordinary. I took her to the hospital and found the same condition at operation. In both of these cases the tube had ruptured. I think it important to bear in mind that when a woman who has menstruated regularly, whether around the menopause or sterile, if the patient has possibly skipped one month or is a few days over her period and is taken with acute pain in the abdomen with or without bleeding, you may expect extrauterine pregnancy.

The removal of the placenta depends on the individual case, and the site of the placenta. I believe it preferable to leave it if it is attached to the stomach, or a large part of the intestines. If it is left, or adherent, you have to take it out later at a more favorable time, and you will not have the severe hemorrhage to contend with. I understood Dr. Jones to say that in his case he sewed the abdomen up without drainage, leaving the placenta. Of course drainage has been discussed and talked against, but I still drain where the placenta cannot be removed at the time of operation.

Early recognition is the important thing to remember in cases of tubal and abdominal pregnancy, operating before rupture takes place if possible.

Dr. J. Bolling Jones, Petersburg (closing): Babies of this type have been carried in the abdomens of women for years. They are like big ovarian cysts. How they can be carried and not cause more discomfort is more than we can see. The foetus is dead yet there is no infection.

Dr. Byrd speaks of a case of his in which the foetus was dead and the true condition was not recognized until the abdomen was opened. If we bear in mind there is such a thing as abdominal pregnancy, I do not think one likely to overlook it. The main point is to discriminate between evidence of actual rupture at any stage of development, which would require immediate section, and certain minor disturbances of the abdominal brain simulating rupture and requiring no interference. I was guilty of this error, opening the abdomen and finding the sac intact with foetus alive at four and a half months. I feel sure that this pregnancy undisturbed would have advanced to a safe time for operating in the interest of the child as well as the mother.

Dr. Rucker speaks about the placenta and the length of the baby. I am sorry we did not measure the baby. The placenta was smaller than usual, though it seemed especially large to me at the time.

XUM

There was not much difference otherwise. The mother is quite a small woman, which would necessarily affect the size of the offspring to a great extent.

Dr. Myers speaks of the early operation in ruptured ectopic. Of course we advise this in every case. In the abdominal case here reported, the woman refused early operation. The placenta was entirely removed, hence the abdomen was closed without drainage.

PAINLESS LABOR.*

By R. L. RAIFORD, M., D. Sedley, Va.

The intense interest manifested in recent years by all prospective mothers in twilight sleep and other forms of pain relieving methods advocated or used during childbirth forces us to realize the absolute necessity of abandoning the old "watchful waiting" method of handling our obstetric work and adopting in its stead an "up and doing" policy in these cases. It is true that nature will, unassisted, bring about delivery in a large majority of our cases and that the skill of the attending physician may be really needed only in the abnormal cases, but it is growing to be equally true that he who sticks to this policy will sooner or later find that, to put it mildly, he is not popular with this class of patients. They do not hesitate to tell you, and rightly so we believe, that they sent for you to help them and not to sit around and look at them.

Man's inhumanity to the pregnant woman is shown by his apparent, if not real, negligence in the study of the more refined methods of the practice of obstetrics, for until very recent years it has been deemed by many of the profession as well as the public that nature could care for all except abnormal cases of delivery, thus debarring the general practitioner from the refinements of skill which constant caring for normal cases will lend to the handling of those that are difficult. Many doctors will tell you openly that they detest the practice of obstetrics and, as a natural consequence, they are not taking the interest in this work that would carry with it the ability to help make all cases less painful and exhausting and make the difficult and serious cases much less so.

If pain were eliminated from the world, much that is best in the medical profession would pass with it, for it is pain in its broadest sense that brings most of our patients to us—either the pain they are then suffering or the pain they are afraid they will suffer in the future.

We rarely see an expectant mother, especially among the better classes, who does not dread the ordeal that is facing her, and this dread is increased to actual fear in many primipara cases and in patients of a nervous disposition. Here we are dealing with women who are hypersensitized to pain and who are approaching long hours of the most intense suffering human flesh is heir to. Furthermore, they have had months in which to learn from their fellow sufferers the horrors of childbearing. They have also had three or four months of nausea and several months of embarrassment and separation from society and their usual avocations because of their condition.

When we consider these facts, it is little wonder that there should be just cause for discussions among the leaders of our country concerning race suicide and kindred subjects. It is little wonder that the discussions of twilight sleep in our leading periodicals, though they be fantastic and impractical, should arouse the interest of every normal woman to the point of demanding better and more humane treatment during this most trying period of her life. And it is little wonder that the specialist who is handling obstetric cases wisely and intelligently and meeting the desires and needs of the patient is keeping busy in spite of the handsome fee he gets when those of us who are paying no attention to these refinements of practice have plenty of time to burn, but little money to spend.

It is claimed that in the average case "Painless Labor" can be about as nearly approached as the much vaunted painless extraction of teeth. If we make an analogy of the two cases by comparing the preliminary discomforts of pregnancy to the discomforts that lead up to the point at which it is deemed necessary to extract a tooth: the pains of early labor to the pains which accompany the application of the remedy to relieve the pain of extraction; and the well handled case during the second stage of labor to the actual extraction of the tooth, it can be seen that, bearing in mind the relative seriousness of the two operations, one may experience as little relative discomfort in normal labor as in the tooth extraction.

Since this paper is meant to deal primarily with the problems of the general practitioner, there will be no attempt to discuss methods that can be used only in a well organized and

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equipped institution. For this reason, since twilight sleep requires the constant presence of a trained attendant, and nitrous oxide oxygen must be given by means of apparatus that is not practical for him to use, we shall not discuss the use of these two methods of practice.

There is no doubt that the best method of making the expectant mother more comfortable is to gain, if possible, her perfect confidence. This can be done only by first becoming an intelligent and scientific obstetrician, and then by transmitting this knowledge of ability in a pleasant and unobtrusive manner to the patient. Frequent and painstaking inquiry as to the patient's health, careful and frequent analysis of the urine, correction of her ailments, if possible, however small they may be, and encouragement along the line of her ability to go through her confinement successfully, is the best way to build up confidence.

A sympathetic and firm handling of the case from the very begining of labor pains, always keeping busy at something, if possible, while in the presence of the patient, never allowing her to get the impression that you are merely sitting around waiting for some complication to arise before doing anything, will cause a continuance of this confidence, and will often accomplish wonders in making your patient satisfied and comfortable. Some good men depend on this method entirely, but while it alone will act nicely in some cases, and will help immensely in all cases, we would hardly be justified in depending on this plan alone.

The drugs which have been used most successfully in alleviating pain during the first stage of labor are chloral, morphine, or morphine scopolamine combined. Most cases get on well enough not to require any treatment during this stage other than an occasional assurance that she is doing well. In others of a nervous or irritable disposition it will be well to give small doses of one or the other of these drugs as indicated. In some cases a little chloroform or ether during the latter part of the first stage, especially if pains are severe, the os rigid and dilatation slow, will not only make the patient immensely more comfortable, but will usually facilitate dilatation and thus hasten the progress of labor.

It is, however, at the beginning of the second stage of labor that the ability of the trained obstetrician has the chance to make a real home run. If called early in the case, it will often tax the ingenuity of the most skilled physician to do enough to keep the patient satisfied that he is exerting his best efforts to help her, but after dilatation is complete and pains are strong and sufficiently frequent he should have plenty to do most of the time. Here the general anesthetic may be given with each contraction of the uterus, just enough to relieve the sharp edges of the pains but not enough to retard labor. This should be kept up until the head is well down on the perineum when it should be pushed to complete anesthesia, allowing the baby to be born without the consciousness of the mother.

In cases where the pains are not sufficiently strong unassisted we may, after dilatation is complete and if we are sure there is no mechanical obstruction, give small doses of pituitrin as indicated, to give tone and strength to the uterine contractions. But before giving this drug, we should always be prepared to give an anesthetic as needed, to hold the pains under proper control, for there is little doubt that the precipitous labors we hear about are due to the fact that the rapid action of pituitrin is not properly tempered by a skilful administration of chloroform or ether. After giving pituitrin the usual management in this class of cases is the same as in cases where pains are normally strong enough without its use.

By the careful use of chloroform or ether and pituitrin, if necessary, we will in most cases be able to perfect delivery with the mother so thoroughly anesthetized as to be unconscious of the fact that the infant has been born. Often, too, the placenta can also be delivered before complete consciousness is regained and it is not unusual for the mother to ask, after she has been dressed and fixed up nicely in a clean bed, how long it will be before she will get through, and it is always most gratifying to have her smile and thank you for having assisted her in getting over the dreaded ordeal so nicely.

We need not dwell on instrumental or other special forms of delivery as this paper is meant to deal primarily with the normal case. Potter's method which is designed to bring about delivery at a specified time by means of bags and podalic version may be used by one skilled in its methods and under proper conditions, but the method outlined in this paper is so simple and easy to practice that it may be used in any backwoods cabin with success.

When the general practitioner has given the question of obstetrics the thought and study due it, and acquired the skill to handle the normal case in such a way as to give the unqualified impression that he has given value received for the fee he gets for his services, the midwife problem will be largely solved. Let us always bear in mind that it is not the desire to save money alone that causes our women to have a midwife to attend them during confinement, but largely the idea that we have, through our negligence, allowed to become prevalent that in normal cases the midwife can be of about as much help as the doctor. All the abuse and criticism which can be heaped on the poor midwife who, in the present arrangements of society, seems to be with us as a necessary evil will have but little effect on her present status, for we may just as well sooner as later face the irrevocable fact that more intelligent and efficient service from the general practitioner in the normal case of obstetrics will be the ruling factor in solving this troublesome problem.

In conclusion, let me say that he who dons the garb of a practitioner of medicine, the highest calling save that of the ministry which it is is our privilege to follow, and does not equip himself to relieve the suffering of the parturient woman in every possible manner in which he is capable, is guilty of the grossest neglect. To argue that labor is a natural process which demands no interference, except when an abnormality arises, should have about the same bearing as to say that our forefathers dwelt in caves, wore skins for clothing and ate their food uncooked. We must ever bear in mind that we are dealing with highly sensitized and often nervous women, the product of modern civilization, and, if we do our duty as obstetricians in such a manner as to gain their unqualified confidence and appreciation, we must treat them not as her forebears of medieval times but as what she is today. As a parting thought let me say that more scientific attention to the normal case of labor will not only be rewarded by the lasting gratitude of the patient and a better income for the physician, but will the better qualify us to handle our difficult cases with more skill and better results.

DISCUSSION.

DR. R. B. JAMES, Danville: Dr. Raiford, in referring to "Twilight Sleep," stated that it was necessary to be on hand all of the time. I do not think that this is necessary.

I remember a case I had of a young woman with her first child, and, after getting her quiet and asleep, I went on into the next room and went to sleep. I always give adalin tablets. I find these very effective, and I think it a good thing. If you give her a hypodermic she will go on to sleep. Then if she makes more noise, give her some more. I do not see the necessity of being with her all of the time. To hold off the pain and let her go to sleep is better than to be watching all of the time.

If a woman goes into labor at ten p. m., and is not through until six o'clock the next morning, it takes a lot of ingenuity to find something to do all of that time.

DR. J. BOLLING JONES, Petersburg: I presume that a great many men do a lot of obstetrics. Personally, I have not done a large amount, but I have never had any more loyal patient than the woman I have delivered of a child. Deliveries can so easily be made practically painless.

In the operating room at the hospital (we have our delivery rooms near the operating rooms), and frequently when I am operating, I hear the screams of a woman being delivered of a baby, and I think how easy it would be to make that delivery painless.

I think Dr. Raiford is right when he says that it should be made painless. In the first dilating stage, I use a compound of chloral, bromide and mercury, with nearly one quarter grain of morphine. I do not hurry the labor, but give her plenty of time, and keep assuring her that I am going to make the labor painless.

Remember two things: you are to make it painless, and if she cannot have the baby, you can.

DR. W. E. ANDERSON, Farmville: I was impressed very favorably with Dr. Raiford's paper.

I just want to emphasize the point he made of keeping the confidence of the woman in labor. Primary to labor, I think it a good idea to have her in good trim, and keep assuring her that when the time comes you are going to see her safely and easily through.

I prefer chloral to morphine. I thinks the morphine hypodermic quiets the woman, but it postpones labor. I do not often find that they vomit the chloral. If she does vomit the chloral, I use chloroform, just enough to get the patient quiet. I find that chloral keeps the woman in a frame of mind to go on and have the baby.

DR. G. B. BYRD, Norfolk: Anesthesia with labor has always been a sort of hobby with me.

I think every woman ought to have as much relief at this time as she can get. It has been my custom to use nitrous oxide as a routine measure, not only in the hospital, but in the home. I think it depends on the training you have had in reference to nitrous oxide, if you use it. I give just enough to relieve pain. It has been my custom to give a dose of morphine when the patient begins to be uncomfortable. It does not retard labor. I believe it is a little quicker following a dose of morphine than if they did not get it.

The amount of morphine I use depends on the size and temperament of the patient. I had rather use small doses often, than to use a large dose. I usually use six milligrammes. Then you give the nitrous oxide, and the patient will go through it well, and come out in a frame of mind not to mind having another baby.

DR. R. L. RAIFORD, Sedley (closing): I wish to thank most heartily all the gentlemen who have spoken so kindly of the manner in which I tried to handle the subject in question. We do not find many men doing what Dr. Byrd says he does.

What I wanted to particularly impress on you, is to do what you already know how to do, instead of neglecting it.

NASAL ACCESSORY SINUSES AND OPTIC NERVE DISTURBANCES.*

By J. E. DIEHL, M. D., Norfolk, Va.

It is not my intention to discuss at length the various theories as to the effect of sinusitis in relation to optic nerve disturbances, but to confine my remarks to what I have found in my own cases, with a slight review of some of the literature. So what I may have to say is offered as an opportunity for discussion, and not with the idea of adding anything of material value to the subject.

There has been a great deal of literature written on this subject during the past few years, and I find on a careful review of the subject, that there is a remarkable unanimity of opinion among most of the writers as regards their findings. It is rather unusual and unique to find this harmony among a large number of enthusiastic workers.

If the close proximity of the posterior ethmoids and sphenoids with the optic nerve and also the close relationship between the vascular systems have any bearing in optic nerve disturbances, then the question naturally would confront us, how is it that the optic nerve is not involved more frequently in sinusitis, especially when we find nasal pathology well established? From what I can understand, the optic nerve is not involved so frequently in those cases where we find rather manifest pathology on inspection, which is usually confirmed by a roentgenogram and at times by the transillumination, but more often in those cases where the nasal pathology is more obscure and rather ill defined. This statement of course, does not hold true in all cases, but the tendency is fairly well established by those who have wide experience, and they offer evidence to prove their contention. I believe the early writers considered the close proximity of the sinuses to the optic nerve as the most plausible explanation of eye disturbances, but they did not offer anything more than this fact. From this view they have brought forth a number of well founded and explained etiological factors. It is fairly well established that the more gross the nasal pathology the less apt are we to find eye disturbances and conversely, the less nasal pathology we find, the more apt are we to find eye disturbances. It is difficult to see why this should be, but this does not alter the situation one way or the other. Does the microscopic pathological picture throw any additional light on this subject? From the standpoint of pathology, both gross and microscopical, but little information is obtained. If the pathologist can enlighten us, very well and good, but if he can not, we seek solace by saying this seems to be the general belief among the rhinologists and our attention is directed to the remote and obscure pathology in the nose as a great potential factor in causing eye trouble.

When we speak of nasal pathology we are led into a broad field of interpretation and it is very hard, in borderline cases, to tell just where the normal ends and where the abnormal begins; this not only applies clinically, but is true regarding the laboratory findings as well. Climatic conditions have a certain influence, and the various stages of life also play a part, the characteristic anatomy of the nasal chambers, the question of free drainage and good ventilation, the position and shape of the turbinates, all of which have great potentialities in causing sinusitis and other more remote conditions.

While in the United States Army I had the opportunity and pleasure of examining a large number of soldiers, and my attention was particularly attracted to a large number of what I would term abnormal nasal septi, or septi that could cause local or general pathology. I believe that I am not exaggerating when I say that thirty to forty per cent were potential sinusitis cases. I have no figures to substantiate this statement, but I believe it is a conservative estimate. If this statement has any scientific value, then it would be the duty of the ophthalmologists to constantly bear this in mind and be on the lookout for nasal trouble that may account for the eye condition.

Now what are some of the most common eye disturbances attributed to the nasal accessory sinuses? The eye findings are fairly well set forth and they are not unlike those found in a number of other conditions. Some of the most constant findings are as follows: A central or paracentral scotoma, relative or abso-

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lute; enlargement of the blind spot, the vision not necessarily being disturbed, or slightly so, or there may be blindness. The ophthalmoscopic findings, as reported, may show little or no change in the disk. Some writers have reported finding one to three diopters of swelling of the disk said to be due to infection of the posterior ethmoids, and by subsequent operation on the nose the vision has returned to about normal and the swelling of the disk disappeared with only slight blurring of the edges remaining. I must confess that within my limited experience I have not found a case of eye disturbance that I was satisfied arose from the sinuses. The question may be asked, do I examine the fields in all my eye and nose cases? My answer is in the negative. However, I do make the confrontation and perimetric tests in all cases where I suspect optic nerve involvement. My omission may account for the failure in detecting some of these early and interesting cases, and I hope that by being more careful, and by mapping out all fields, I will be more fortunate in this respect than in the past.

Quoting Dr. Cushing, from an article in the *Journal of American Medical Association*, "When a retrobulbar neuritis is said to be accompanied by two or three diopters of swelling, we are certainly dealing with something which a hyperplasia of the mucous membrane lining the accessory sinuses is not capable of producing.

"During the course of the past twelve months many patients with brain tumor have appeared in the Brigham Hospital clinic who had recently undergone radical intranasal operations for assumed infection of sinuses. Were these operations done merely on the chance that the patient complained of obscure headaches or visual disturbances in the absence of choked disk, it would be understandable; but when these operations are performed on people with full blown changes in the optic nerve and with the idea that cleaning out the ethmoids and sphenoidal regions might check the process, we certainly have gone too far."

I appreciate the delicacy of making a diagnosis of optic nerve disturbance, due to an obscure nasal pathology, and we are not justified in so doing until we have exhausted every means available in making a diagnosis, and in order to reach this final analysis we must have the co-operation of the internist, neurologist roentgenologist and ophthalmologist and, if we have failed to consult any one of these specialists, we have been derelict in our duty.

The future will be very interesting indeed to us all, especially to the men who have a number of cases on their records of diagnosed eye disturbances due to accessory sinuses, who had refused intranasal operations, as it is only a question of time until the rhinologist will determine whether or not his diagnosis was correct and the proper treatment advised. There have been a number of cases reported to show that the sinuses can and do cause eye trouble, and most of them that have been operated on have shown improvement or gotten well, and at some future time we may be able to tell the subsequent history of the cases who had refused operation.

337 *New Monroe Building.*

DISCUSSION.

DR. H. L. MYERS, Norfolk: I would like to say a few words on this very important subject. It should be emphasized.

Many conditions of the eye which we used to suppose were due to other causes, are almost certainly proven to be due to diseases of the nasal accessory sinuses. The examination of the anatomy of this region will satisfy anybody as to how easily disease of the walls of the sinuses can affect the optic nerve and other parts of the eye. I think that most of these cases show neuritis.

Dr. Cushing's summing up of the situation is the best to be found on this subject.

DR. J. E. DIEHL, Norfolk (closing): I brought up this subject to start a discussion, and I am sorry that there are not more here to discuss it. There have been volumes of literature written, both pro and con, and right at this time the pendulum seems to be with the pros. Personally, I feel like taking the mid-ground, at least until I have had more experience in this particular condition. It is the tendency of human nature to become over enthused at times, and, as time and experience grow, we often are led to modify, or at times change, our opinion entirely.

Dr. Myers' remarks are very important and instructive and I greatly appreciate his discussion.

HYSTERECTOMY AND OVARECTOMY FOR BENIGN TUMORS AND SUPPURATIVE DISEASE IN SIX HUNDRED WOMEN.*

By G. PAUL LA ROQUE, M. D., F. A. C. S., Richmond, Va.

The six hundred women herewith reported were encountered among fifteen hundred women operated upon for all types of pelvic disease during a period ending 1922. They have all been studied, operated upon and treated by myself personally in various hos-

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pitals, and none have been excluded. There were ten deaths, a mortality of 1.6%: six of these among the first three hundred (2%) and four among the last three hundred (1.3%).

Two hundred and seventy-five (46%) had fibroids of the uterus, variable in size from that of a walnut to 16 pounds, and in number from one to as many as twenty or more. Over 60% of women with fibroids of the uterus also had ovarian cysts and 39% of fibroids were complicated by suppurative disease.

Four hundred and fifty (75%) women had ovarian cysts varying in size from that of an egg to 20 pounds in weight. Approximately 10% of the cysts involved both ovaries. Of women with ovarian cysts 25% had also fibroids and 33 1/3% of cyst cases were complicated by inflammatory disease.

Suppurative disease was present in three hundred and sixty-five (62%) of six hundred women and involved the uterus, both tubes and cyst. In 30% of these, pelvic abscess existed about these organs. Of the cases of suppurative disease in this series, 18% had previously existing fibroids of the uterus and 42% had ovarian cysts.

The pathological findings after the abdomen was opened were those of real pathology,—ovarian cysts and uterine fibroids of sizes, locations and numbers too familiar to need further mention: suppurative pathology seen as suppurating cysts, inflamed fibroids, old-fashioned dyed in the wool pus tubes and pelvic abscesses; these were the pictures exhibited.

More than half of the women in this series presented additional surgical pathology needing operation apart from that which called for the removal of the uterus or ovaries. In eighteen women tubal pregnancy was present; in fourteen the pathology had caused ulceration of the bowel in various parts necessitating bowel suture; more than three hundred had definite appendicitis which of itself needed operation; thirty had gall-stones; fifty hernia; more than a hundred required operation upon the cervix and perineum and rectum; in ten per cent of women there was present serious secondary anaemia, ranging from 21% to 50% hemaglobin; many cases presented heart and kidney disease and obesity, glycosuria and other non-surgical coincidental affections. In six women operation was performed during complicated pregnancy or labor.

Hysterectomy was performed in three hundred and seventy-five women (63%), both tubes being invariably removed with the uterus. Hysterectomy was of the subtotal supravaginal type in three hundred and sixty-five and was complete, including the cervix, in ten cases. Ovarectomy was performed upon four hundred and ninety (80%) of this series; 11% of the ovarian cases necessitated removal of both ovaries and 89% required the removal of only one. Combined hysterectomy and ovarectomy was performed in two hundred and sixty-five of the six hundred women (46%). In one hundred and ten of the six hundred cases (20% of the three hundred and seventy-five hysterectomies) only the uterus was removed, the ovaries not being diseased. Of the four hundred and ninety women requiring ovarectomy, 45% did not need removal of the uterus.

All deaths occurring before complete recovery from the operation and discharge from care regardless of the time and cause of death are charged to the operation. In no case has operation been declined because of desperate condition or for any other reason. One obese woman with large tumor and slight fever died suddenly of embolism two days after admission to the hospital while resting in bed the day before operation was contemplated. No other case died while waiting.

The ten deaths were as follows. Four of these were also reported in a separate contribution dealing with four hundred cases of suppurative disease.

12-1895. 45 years old, large fibroid cystic ovaries and dense adhesions; valvular heart disease. After hysterectomy, removal of both ovaries and appendix, she died the third day of acute dilatation of stomach and heart.

15-2344. 35 years old; fibroids and ovarian cyst. After complete recovery from myomectomy, removal of ovary and appendix, died in five minutes of cardiac embolism while sitting up in bed the twelfth day.

15-2426. 35 years old, pelvic abscess, large ovarian cyst ulcerated into sigmoid, single pus tube; pulmonary tuberculosis. After removal of ovarian cyst and left tube, suture of hole in sigmoid, appendectomy and drainage of pelvic abscess, died six weeks later of septic exhaustion and pulmonary tuberculosis.

16-2502. 35 years old, with large fibroids, ovarian cyst, pus tubes. After hysterectomy, ovarectomy and appendectomy, died the 15th day of what seemed to be intestinal obstruction.

16-2537. 48 years old with gangrenous ovarian cyst, dense adhesions and bleeding of suspiciously malignant uterus. After hysterectomy, ovarectomy and repair of signoid, died the third day of peritonitis.

16-2556. 25 years old, with double pus tubes, cystic ovary and pelvic abscess all acute and erroneously

believed to be appendicitis or tubal pregnancy. After hysterectomy, ovarectomy, appendectomy and drainage of pelvic abscess, died of septic shock.

21-3838. 30 years old, with three weeks post-abortional, double pus tubes, pelvic abscess and cystic ovary. After three days without fever, double salpingectomy, partial hysterectomy, ovarectomy and appendectomy was performed; she died the fourth day of septic shock and suppression of urine.

21-3841. 40 years old with enormous double intraligamentary dermoid ovarian cyst and small fibroid. After removal of both large ovarian cysts, uterus and appendix, died fifth day of dilatation of heart.

22-3984. Fibroid uterus, ovarian cyst, ruptured extrauterine pregnancy, non-suppurative inflammation. Hysterectomy, removal ovarian cyst, appendectomy, drainage. She died five days later. Autopsy showed pus imperfectly drained.

22-4030. 49 years old with small multiple fibroids, moderate inflammation of uterus and single ovarian cyst. Cauterization of cervix, subtotal hysterectomy and removal of one ovary and appendix was performed. She did well for a week, developed signs of peritonitis and died the tenth day following operation. Many consultations were held and we felt it might be a case of peritonitis from an infected cervix with possible small bowel adhesion.

Of the total deaths there were five in two hundred and thirty-five women in whom the pathology was non-suppurative (clean cases) (2.1%) mostly large tumors; and four of three hundred and sixty-five women with suppurative disease complicating fibroids and cysts (1.6%).

Considering the cases in which only the uterus was removed, leaving the ovaries, there were one hundred and ten women with no deaths; and in two hundred and twenty-five women in whom the ovaries were removed leaving the uterus, there was one death. Cases requiring combined hysterectomy and ovarectomy included two hundred and sixty-five women with eight deaths (3.4%): these were women critically ill with large tumors and suppurative disease needing operations technically difficult.

The women have welcomed operation as a last resort. The clinical story is that of recurrent attacks or alternate remissions and exacerbations of symptoms, periods of encouragement that they may be better, discouragement that for some usually assignable reason they have had a relapse and finally despair of being cured without "the knife." The operation is forced by serious illness from suppurative disease or large sized tumors. Broadly speaking, the larger the tumors, the less extensive the inflammatory disease and *vice versa*.

Those socially and financially "well to do" have many times been "almost completely cured" by endocrinologists, electro-therapists and courses of "local treatments" by "office gynecologists." Those poor and less conspicuous socially have recited the same story of ups and downs characterized by remissions and exacerbations of symptoms independently of local treatment and endocri-organo-therapy, but in spite of Pink Compounds, Gold Discoveries, Wines of special designation, and home brewed teas and concoctions painstakingly prepared by friends and neighbors.

With the clinical story so familiar, it would seem quite superfluous to urge all women hastily to operation by the threat of impending death from the disease. The real advantages of early operation for obvious and symptom producing benign tumors of the ovaries and uterus are incident to the cure of suffering, checking extension of disease, preventive of the necessity for technically more difficult, more radical and more dangerous surgery on account of complicated pathology in women older and less healthy. The conservative purpose of treating benign tumors and inflammatory disease of the uterus and ovaries is directed by efforts to preserve menstruation, ovulation and the ability of the woman safely to bear children. The less extensive the disease, the more likely are we able to preserve uterine and ovarian tissue and with these menstruation and ovulation. Early operation is conservative surgery; late operation calls for radical surgery. And though it is clearly demonstrated that the longer they wait the more organs will have to be removed and though even for ancient and extensive disease the operation is not likely to be fatal, the disease may terminate fatally in spite of the operation in a few cases.

The urgency of immediate operation is an important question. Women rarely receive operation for the first "spell" of symptoms caused by pelvic tumor and inflammation save as a result of an erroneous diagnosis of appendicitis, the operation for which discloses a normal or diseased appendix and discovers disease of the pelvic organs. Uniformly good results following delayed operation upon previously unrecognized twisted ovarian tumors, ruptured tubal pregnancies, and appendicitis, under the erroneous belief that we were dealing with pelvic infection or fibroids; and hasty operation upon previously unrecognized pus tubes or pelvic abscess under the erroneous

belief that we were dealing with ovarian cysts or uterine fibroids; the results of such errors without gross differences in the results suggest that after a reasonable wait for sizing up the situation the time for operation is of minor importance as compared to the method of procedure and technic of operation.

There can certainly be no reason, if we permit experience to speak for itself, for "emergency" operations for tumors and inflammatory disease of the pelvic organs. On the other hand, there is the conspicuous observation that no case need wait long. In the cases here reported, errors have occurred in both directions; on the one hand waiting patiently for symptoms to subside and on the other proceeding expeditiously to do the job. There have been no conspicuous differences in the results of both plans of action. Broadly speaking it seems wise to get the patient and pathology ready then go ahead but never rush. Any case may without danger wait until they can be properly placed under the care of a skilled surgeon; many cases may quite properly be operated upon the day after admission; no case should be "emerged" upon.

A systematic thorough operative procedure is called for. In nearly all cases after the woman is anaesthetized the final examination is made. After cleansing the vagina of gross filth, the iodized cervix is well dilated and a dull spoon curette introduced for exploratory purposes and to remove loose material. In years gone by, we usually scraped about in the interior of the uterus. We have never felt any reason to believe that curettage does good. If the cervix is torn and hysterectomy is not necessary, we have repaired the cervix if it is not much reddened or infected; if badly infected or if hysterectomy is to follow, we prefer to amputate the cervix with the electric cautery knife. This practice was not pursued in the earlier cases and some of the women were annoyed by purulent vaginal discharge after operation. Since we have had satisfactory electric cautery knives, we have employed this method of destroying the cervix and the women have had after hysterectomy a dry vagina. We feel quite strongly that infected torn cervices should not be neglected because "the abdominal work may be enough." Such lesions need treatment because of their own troubles regardless of abdominal disease.

After dealing with the cervix, lesions about the vagina, vulva and rectum are scrutinized and dealt with accordingly.

The abdomen is usually opened by a vertical incision to one side of the middle line. In exceptional cases of excessively fat or greatly overstretched and prolapsed belly walls or of large fixed intraligamentary tumors, an elliptical cross cut of the abdominal wall has seemed to give more easy access to the pelvic pathology and left a good abdominal wall.

Before the pelvic organs are touched or closely inspected, the gall-bladder, bile duct and stomach are examined; usually both kidneys are felt to see if one may be absent and to detect lobulated kidney and palpable calculi. Inguinal and femoral hernia are removed by the intraabdominal method and umbilical herniae are excised by prolongation upward of the vertical incision. The appendix is then removed and we are ready to go to work. In approximately twenty-five or thirty of the cases here reported, appendectomy had been performed by other surgeons before coming to me for pelvic disease. I have also operated upon many women for appendicitis after they had previously had pelvic disease operated upon by other surgeons. Three or four of the women in this series of six hundred seemed too sick to take the extra three minutes for normal appendectomy.

By proceeding in this manner curing the non-pelvic lesions before approaching the pelvic pathology, the woman is cured of all her disease thereby being given more nearly 100% efficiency of operation; second operations for appendicitis, hernia, lacerated cervix and perineal tears are forestalled; the operative procedure most apt to be productive of shock is reserved for the last so that she may be put without delay in a warm bed upon the treatment for shock. In dealing with gall stones, however, we have in thirty cases of this series operated upon the gall-bladder as the last act of the operation in cases of pelvic pathology of non-suppurative character. In the presence of pus in the pelvis we have usually deferred the gall-bladder work for a subsequent operation.

We have performed three types of ovarectomy and hysterectomy: partial, subtotal and total. Cyst puncture has long been abandoned. To clip from the uterus an innocent pedunculated fibroid is not designated as an operative procedure.

Partial or subtotal ovarectomy is employed for non-strangulated, single or multiple cysts with a respectable amount of normal ovarian tissue about the hilum and with little or no evidence of cyst infection. In such cases the remaining portion of the ovary is stitched with its sutured raw surface under the round ligament.

Total ovarectomy has been employed for the removal of ovaries and cysts hopelessly buried in inflammatory exudate or dense adhesions or obviously internally infected; in all cases showing at operation evidence of recent strangulation or gangrene resulting from torsion of the pedicle and for cysts in old women.

In four cases in which ovarian tissue was conserved in young women, we have had to reoperate after from one to three years on account of ovarian cyst, two of whom had tubal pregnancy and one suppurative salpingitis. Perhaps we have erred on the side of conservatism in other cases, but the great majority of women in whom ovarian tissue was thus conserved have remained satisfactorily cured and been most grateful that they continued to menstruate.

My standard reason for removal of ovaries is complete destruction of ovarian tissue either by suppurative inflammation or large cyst formation. Malignant disease, primary in the ovaries, calls of course for removal if recognized early; but I have not thus far been able to do this. Inflammatory disease primary in the ovary is exceedingly uncommon. In perhaps six cases of this series I have encountered small abscesses in ovaries in women with normal tubes. Practically all the ovarian abscesses I have seen have been ovarian cysts infected from adherent suppurating tubes, the appendix, caecum, sigmoid and small bowel. In fourteen cases we have been compelled to suture openings into the bowel at points of dense adhesions and in one case the bowel had been previously punctured by a gynecologist while puncturing an abscess in the cul-de-sac. All but one of these recovered though some had close calls. All cases of ovarian cysts to which the bowel had not ulcerated have recovered.

The fluid from the largest cyst of this series weighed twenty-one pounds. The large ovarian cysts are commonly not complicated by inflammation; if they were the women would be so sick they would be compelled to be operated upon before the cyst becomes so large.

Over 90% of all patients in this series requiring operation upon the ovaries also required operation for other lesions of the pelvic organs; 60% required operation for displaced uterus; 30% required removal of tubes; 25% repair of lacerated cervix; 25% hysterectomy or myomectomy for fibroids. On the other hand 30% of women in whom we have corrected displaced uterus have needed also removal of cysts and over 60% of sufferers from fibroids of the uterus have also had ovarian cyst of operative size. The number of cases of ovarian cysts in women with uterine displacement or fibroids has so definitely increased with the age of the women that we are quite suspicious that in some way displacement favors the development of ovarian cysts. Certainly in such cases (a large proportion) a vaginal pessary, even though it may seem to hold the uterus forward, cannot cure the woman. For cysts existing in women with fibroids, advocates of light therapy by radium and X-ray have not yet offered claims of cure by these methods.

In no case have both ovaries been removed from any woman under forty-five years of age unless all ovarian tissue had been hopelessly destroyed by inflammatory disease and cysts. In all but 10% of the total cases I have found it practicable to save some portion of at least one ovary and avoid the production of artificial menopause. This practice has thus far been satisfactory and while a few women have failed to get perfect relief of symptoms and a small number have had second operations after a year or so, the number has been so small and the satisfaction to the women has been so great, I am satisfied to continue the purpose of sane conservation of ovarian tissue in young women. In women beyond the age of forty-five no attempt to conserve ovaries was made, unless they were unquestionably normal. I have not removed ovaries on account of pain. Women with pathology in the ovary who suffer pain have also uterine or tubal inflammation or painful tubal and uterine contraction incident to torsion of cysts or prolapsed ovaries. In my experience women with the largest ovarian cysts (five to twenty pounds) have not complained of pelvic pain and have shown at operation normal tubes and uterus free from inflammation. This observation and the dis-

covery of cystic ovaries incidentally during operations upon other abdominal organs which have no symptoms of pelvic disease has aroused in me a strong suspicion that ovarian cyst, unless complicated by inflammation of a tube or uterus or of the cyst itself, is a painless disease save only when twisted on its pedicle. We cannot concede to the wisdom of removing ovaries merely because hysterectomy is necessary. On the other hand it has seemed wise in a considerable number of cases in which double ovarectomy for cystic and suppurative ovarian disease and double pus tubes is called for, to remove the enlarged prolapsed or suppurative uterus.

We have employed two types of partial hysterectomies. Both suppurating tubes and the intervening portion of the fundus uteri removed in one piece makes easy the complete covering of all raw surfaces by a continuous stitch from one end to the other of the broad ligament over the uterus. The other type of partial hysterectomy or myomectomy consists of the deliberate excision of single, medium or small sized intra-mural fibroids, and a small amount of the adjacent wall of the uterus. After thus removing by means of a surgical incision fibroids of medium size, reconstruction by suture of the uterine incision seems superior to the less exact method of digging out fibroids, leaving a ragged bed which can rarely be neatly closed.

Subtotal hysterectomy removes all of the uterus above the level of the bladder attachment. This is the type of hysterectomy called for in the great majority of women with multiple fibroids, extensive suppurative disease, and in women at or beyond the menopause with enlarged sagging or prolapsed uterus from whom it is necessary to remove both tubes and suspend by suture the cervix, bladder, vagina and rectum high in the pelvis for the relief of prolapse. Preceding hysterectomy in women with large cystic, torn and infected cervices, cautery amputation of the cervix has proved of great utility in destroying the diseased cervix without the necessity for the more tedious and perhaps slightly more dangerous total hysterectomy from above. The small remaining piece of thoroughly cooked cervix, after cautery amputation of the cervix from below and subtotal hysterectomy from above, serves nicely as holding material to which after being pulled as high as possible. the round and broad ligaments may be sutured for suspension of the vagina. This combination of cautery amputation of the cervix and subtotal hysterectomy has so far, in approximately one hundred cases, served quite satisfactorily for the cases to which total hysterectomy is advocated by many. Menstruation is not stopped by this method. I have performed the complete hysterectomy from above in a few cases of this series without fatalities but much prefer the procedure as outlined above. I am aware that the practice of total as compared to subtotal hysterectomy is becoming increasingly popular and am open to conviction that the total operation from above is no more dangerous and more completely curative than subtotal hysterectomy preceded by cautery amputation of the cervix.

All abdominal hysterectomies have included removal of both tubes. I have seen a sufficient number of women re-operated upon for diseased tubes allowed to remain after hysterectomy to convince me of the wisdom of removing both tubes with every hysterectomy. Except in women beyond the menopause, I have succeeded in being able to leave one or a portion of one sound ovary in approximately 90% of cases of hysterectomy.

Twenty-five cases of myomectomy or partial hysterectomy are recorded, a small number (less than 10%) of the fibroid cases. Most of the fibromyomata upon which I have operated have been so large and so numerous as to leave little or no normal uterus above the cervix. There are cases in which myomectomy is definitely indicated but we must choose these with judgment if we would get the patients well.

Observation of the great frequency of ovarian and inflammatory disease in women with fibroids would seem to place great limitations upon the usefulness of the X-ray and radium to women with fibroid disease. There are few women to whom radiation is applicable, fewer to whom X-ray and radium applications can be assured of curative results and many to whom it is dangerous. The known effects of radium as an agent capable of producing "radium sickness," shock and definite immediate mortality; a burned, fibrous uterus (an "undesirable tenant"); occasional urinary and rectal fistulae (disagreeable sequellae), leads one to believe that the treatment of the few uncomplicated fibroids of moderate size in women beyond forty years of age, by dilata-

tion, curettage and application of radium is attended by higher mortality and fewer cures than the surgical operation.

Hysterectomy and ovarectomy for fibroid, cysts and suppurative disease of all grades of severity in all the women affected should yield complete cures in 98.5 per cent and a mortality of less than 2 per cent of women affected.

THE SEHRT AORTA CLAMP FOR THE CONTROL OF POSTPARTUM HEMORRHAGE.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

Truesdale tells of finding in the German advanced dressing-stations, metal tourniquets of several sizes. The Germans evidently made wide use of this principle for the control of bleeding. It now appears that Sehrt was the originator of the instrument, and that he was driven to the invention of this substitute for the Esmarch tourniquet both on account of the lack of rubber and the fewness of assistants in the field hospitals.

In 1908, Momburg introduced his adaptation of the Esmarch bandage for the control of bleeding in the lower half of the body. The Momburg belt was quickly adopted by obstetricians as a help in the graver cases of postpartum hemorrhage. Sigwart, Hoehne, v. Reding, Fromme, Schestopal, Gogoberidze, Weber, van Erps, and others reported favorable results, Sigwart going so far as to recommend that midwives equip themselves with the necessary rubber tubing. On the other hand, according to Fleischer, Rielander noted circulatory disturbances and collapse after its use, and Riemann and Pagenstecher other untoward effects. Döderlein was able to collect from the literature seven deaths due to its use.

When the World War broke out, Gauss was engaged on the problem of compressing the abdominal aorta without exerting pressure upon other abdominal structures, and devised an apparatus for that purpose. In the meantime, Sehrt had extended the principle of his metal tourniquet to the abdominal aorta and developed an instrument that Gauss himself says is better than his, in that it is lighter and can be applied more quickly. In the last two years, there has been a great deal of favorable comment in the German magazines on the use of the metal clamp for compressing the abdominal aorta. In most cases, when the clamp is properly applied across the body just above the navel so as to occlude the aorta, either partially or totally, the hemorrhage promptly ceases. Gamper, however, reports three cases in which the compression stopped the pulsation in the aorta below the clamp, but not the bleeding from the uterus. He thinks that this was due to a collateral circulation through the ovarian arteries. Becker also reports some failures, but was able to reduce their number by fitting a special pad to the compression plate of the Sehrt instrument. Several patients upon whom the clamp was used have come to autopsy from one cause or another, and in none of them has there been any evidence of damage by the clamp.

There is nothing in the American literature about the clamp except a few abstracts of the German articles. Recent articles upon postpartum hemorrhage by Hornstein and Titus make no mention of the mechanical compression of the aorta for the control of the bleeding. The instrument that I show you tonight had to be imported, and from the difficulty I had in getting it, I would judge that there are few of them in this country.

I have used the instrument in ten cases. The technique is very simple. One locates the pulsating aorta between the recti just above the navel and applies the compression plate over it and compresses the aorta against the backbone until the hemorrhage ceases. The clamp can be left in place for twenty or twenty-five minutes. My patients have complained less of it than of vigorous massage of the uterus. Most of the cases were of only moderate severity, and the bleeding could probably have been controlled by massage of the uterus.

In one case, a difficult forceps delivery, bleeding began immediately after the delivery of the child. Both the mother and child needed my attention at the same time. I stopped the bleeding with the clamp, resuscitated the baby, expressed the placenta, changed gloves, repaired the cervix, and removed the clamp.

In another case, that of a large woman with a big fibroid, the bleeding started two hours after the delivery of the afterbirth. The interne controlled the bleeding partially with the clamp until he could get ready to pack the uterus, and completely stop the bleeding. One other patient was so large that I was un-

*Read before the Richmond Academy of Medicine and Surgery, January 9, 1923.

able to apply the clamp. Her hemorrhage was controlled by a vaginal pack.

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CERTAIN PHASES OF ARTERIAL HYPERTENSION.*

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As has been well said, rise in blood pressure, either systolic or diastolic, is not a disease: it is a mere symptom. Like other symptoms its causes are multiple: they are also obscure. As in treating of other pathologic states, the etiology of which is unknown, one must fall back upon description of the associated conditions. With respect to hypertension, the more definite of these conditions are:

1. RENAL INSUFFICIENCY: In the majority of instances of nephritis with demonstrable incompetency of the excretory function of the kidney, there is a rise in both systolic and diastolic pressures. When accompanied by persistent increase in Urea N_2 and of Creatinin in the circulating blood, hypertension is usually serious and serious in rough proportion to the extent of the rise in pressure above the normal. Few of these patients who show both hypertension and persistent N_2 retention live more than two years. Occasionally, one sees cases with great retention of nitrogenous products from kidney impairment without concomitant hypertension. Such cases, in my experience, are usually either in the terminal phases of their malady and show evidences in the cardiovascular system of past hypertension, or are the victims of active, and often, terminal infection. It is well to remark, that so firmly fixed in the minds of the profession is the idea that hypertension signifies nephritis, that even yet, despite the mass of evidence to the contrary, it is difficult for many to realize that this is by no means true. To brand every case of hypertension as nephritic is almost as if one branded every instance of chronic fever tuberculous.

2. TOXEMIAS OF PREGNANCY: Hypertension, both systolic and diastolic, characterizes most cases of this baffling condition. The rise

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in blood pressure almost always precedes, by days or weeks, any albumiuria, casts, or any retention of urea, uric acid or creatinin in the blood. In fact, hypertension may be the sole evidence of the trouble. This usually declines promptly upon delivery, except when it has previously existed or when it has arisen on a basis of that vascular instability that so often presages hypertension. The kidney involvement, as shown by every known test of renal function, is secondary and usually late. No better instance of the extra renal origin of many cases of hyperpiesia is to be found. No other type of hypertension offers such attractive possibility of contribution toward the solution of the general problem, for no other is so definitely associated with a self limited state that can be controlled and observed in all its phases.

3. Arteriosclerosis: Arteriosclerosis is more often a sequel than a cause of hypertension and may exist without any rise in blood pressure whatsoever. The association of sclerosis of the larger arteries with cardiac hypertrophy and a high pulse pressure is not infrequent. Cases of this type exhibit high systolic with normal or low diastolic pressures. The stroke volume output of the ventricle appears large. The smaller arteries seem less altered than the large trunks. A plausible explanation of the blood pressure findings is a large stroke volume ouput on the part of the ventricle into a relatively rigid arterial tree. Such cases are seen most commonly in those well past middle life and are comparatively benign. The high systolic pressure, characteristic of aortic insufficiency, is dependent upon the large stroke volume output of the ventricle, while the low diastolic pressure is largely, if not wholly, due to the relaxation of the peripheral vessels.

4. Thyroid Disturbances: Many cases of the so-called essential hypertension exhibit signs of excessive activity of the thyroid. Not only is the gland enlarged and its blood supply obviously increased, but tachycardia, increased metabolic rate and pressure of activity may be detected. In frank cases of thyroid toxicosis, the blood pressure is frequently above normal, rarely, however, ranging above 180 systolic.

5. Essential Hypertension: The importance of differentiating hyperpiesia from nephritis, though stressed by many writers, has not had sufficient general recognition. It is to this group I would direct detailed attention. In essential hypertension there is entire absence of evidence of renal incompetency, inflammation or degeneration. A certain number, as years go by, develop an arteriosclerotic type of kidney with gradual impairment of function, but by far the larger part find their end stage in cerebral hemorrhage or myocardial insufficiency. Although occasionally found in those who are thin, the average person with essential hypertension is over-weight and inclined also to plethora. Many, in fact, exhibit the *polycythemia hypertonica* with increased hemoglobin, increased number of erythrocytes in the circulating blood, increased ratio of solids and increased blood viscosity. The activity, energy and capacity of these cases has been a matter of remark on the part of many observers. They have been classified with some reason as hyperthyroid cases. Not infrequently they show a heightened basal metabolic rate. In the earliest phases of the malady the blood pressure may be within normal limits excepting an exaggerated response to effort. One can frequently predict the eventual development of hypertension by observing an undue rise in systolic pressure after effort, interest or excitement. The diastolic pressure rises with the systolic and, when the latter exceeds 200 mm., the former tends to be about 100 mm. lower. As Mosenthal[1] has pointed out, rare examples of this condition have a diastolic pressure raised out of proportion to the systolic. In all of these vasoconstrictor phenomena, which supposedly form the background of high diastolic pressures, are prominent.

Arteriosclerosis is a late, but, I believe, almost constant development. It seems to involve primarily the small arteries rather than the large trunks. It can, of course, be best detected by careful ophthalmoscopic examination. Sclerosis of the cerebral, coronary and renal arteries and perhaps we may add those of the pancreas, is the common basis of the slowly evolving symptoms. The process may last for years without hampering the victim, but sooner or later the blow falls. It is of interest that persons of this type are peculiarly resistant to infections.

Laboratory studies in these cases may reveal information of considerable interest and value. Except in the later stages, when extensive

1. Mosenthal, H. O.: Med. Clin. No. Amer., 1139; Jan. 1922.

arteriosclerotic changes have taken place in the kidney, or when myocardial weakness has led to passive congestion, there is no albuminuria and very rarely casts. The phenolsulphonephthalein test shows a normal output of this dye. The ability of the kidney to pass a concentrated urine is not impaired. Chemical examination of the blood reveals normal figures for creatinin and urea. N_2. A certain proportion of these individuals have a concentration of uric acid in the blood somewhat above the normal level, ranging from 3.5 to 7. mg. per cent. A considerable number have hyperglycemia—the blood sugar after a twelve hour fast being from .120 to .21 per cent. Many have a renal threshold for glucose above the average normal point at .17 per cent. In consequence, glycosuria is not always a reliable criterion of the state of the carbohydrate metabolism. As chemical studies multiply, I am persuaded that the essential hypertonias will be subdivided into different types. When such subdivision is brought about, I believe an important class will be those showing hyperglycemia. There are certain distinctive characteristics exhibited by this type. Elsewhere they have been classified as prediabetic. With the increase in blood pressure and the heightened concentration of glucose in the blood, one finds as associated features, overweight, plethora and arteriosclerosis. The interrelationships of this complex of symptoms are not without practical significance.

Attention has been called to a reduced tolerance for glucose in many cases with hypertension by O'Hare,[2] Botti,[3] Albertoni[4] and others.

Its cause is an interesting matter of speculation. Neubauer[5] in 1910 suggested that an increase in epinephrin might be the basis of this disturbance. Owing to the absence of any test for the quantitative determination of epinephrin in the circulating blood, this attractive theory remains unproved. The idea of Pierce and Keith[6] that hyperglycemia results because the damaged kidney does not utilize the normal amount of sugar presented to it, would claim more attention in the type of case under consideration, if hyperglycemia did not so often occur in cases without evidence of damage to the kidney. The work of Myers and Killian[7] upon the diastatic activity of the blood may have bearing on the hyperglycemia of hypertension. These observers found that many "nephritics" have an abnormally high diastatic activity of the blood which they assigned to a probable renal insufficiency. Diastase mobilizes glucose from the glycogen of liver and muscle and, when increased, brings about hyperglycemia. The question as to what constitutes a "nephritic" must first be made clear. O'Hare[8] makes the interesting suggestion that the hyperglycemia of hypertension results from lessened functional efficiency of the pancreas through sclerosis of the pancreatic arteries. The latter theory is extremely plausible in view of the arteriosclerosis that is so inevitable in the later stages of the malady. In my opinion, a still more simple cause of the hyperglycemia of hypertension can be brought forward as applicable to at least some cases. Is it not possible that some are the result of an ill balanced diet with excess of carbohydrate? It has been a routine practice of many to restrict or prohibit protein in all cases showing high blood pressure without regard to the state of the kidneys. The excuse for this practice has been that traditionally hypertension has carried with it the idea of nephritis. Since the amount of fat one can take comfortably is limited, withdrawal of protein leads directly to increase in carbohydrate. An ill balanced ration with excessive carbohydrate brings in its train a certain tendency to overstrain of the pancreas and to obesity and a debatable tendency to flabbiness of tissue and to arteriosclerosis with circulatory insufficiency.

Is there any proof of an association of arteriosclerosis and hyperglycemia? I know of no experimental proof but on clinical grounds there is strong argument favoring such a view. In diabetes mellitus, even in the young, arteriosclerosis is almost a constant finding. There is no reason, at least in juvenile diabetes, to believe that the arteriosclerosis precedes the diabetes; rather does it appear to be a result of the prolonged metabolic disturbance of which hyperglycemia is the most obvious evidence. My own study of a group of hypertonias of middle age with hyperglycemia has led to an opinion that they all exhibit more arteriosclerosis than their years and their hypertension would seem to demand,

2. O'Hare, J. P.; Am. Jour. Med. Sci.; CLX, 366, Phil. 1920.
3. Botti, A.; Policlinico (sez. pret.) Abst. Jour. Amer. Med. Assoc.; 29:249-250; Feb. 20, 1922.
4. Albertoni. Cited by Botti; ditto.
5. Neubauer, E.; Biochem. Ztschr., Berl. 1910; XXV, 284.
6. Pierce, G.; Keith, N. M.; Proc. Soc. Exper. Biol. & Med., XII:210, N. Y. 1915.
7. Myers, V. C.; Killian, J. A.; Biol. Chem., XXIX:179; Balt. 1917.
8. O'Hare, Loc. Cit.

There is another avenue of inquiry. In cases in which hyperglycemia has been present, what is the effect upon arteriosclerosis of reducing the blood sugar to a normal level and keeping it there? In cases of diabetes mellitus we know that the effect of the maintenance of the blood sugar at a normal level upon the arteriosclerotic complications, such as gangrene and retinitis, is generally a happy one. My own study of a number of examples of hypertension with hyperglycemia has led to the finding that in a very considerable number,—not in all—the restoration of the blood sugar to an average normal level is accompanied by an appreciable fall in blood pressure and lessening of the symptoms of circulatory strain. In such a result, to be sure, the abolition of hyperglycemia is not the sole factor. Almost without exception these patients are overweight: diet that reduces glycemia reduces weight, and reduction in weight, as Rose[9] and others have shown, frequently reduces blood pressure. With such loss in weight, there are doubtless other factors, such as lessened volume of circulating fluid and decreased metabolism. The factors of rest, of release from business or domestic cares, which make data on blood pressure under institutional conditions so unreliable, do not obtain in these cases, since results were had in ambulatory patients going about their ordinary concerns. The literature dealing with the blood pressure of diabetes mellitus has been studied by Rosenbloom[10] who adds observations on 140 cases. From this material one can conclude that there is no change in blood pressure in the average case, but that in milder forms in stout elderly people, especially with evidence of chronic nephritis, or of arteriosclerosis, there is frequently hypertension.

It is certain that cases of severe diabetes mellitus, particualrly in the young, are most prone to exhibit a low blood pressure. In the diabetes of late life, however, hypertension is very common and with it obesity and arteriosclerosis with their consequences. As Mosenthal[11] has suggested there are different types of diabetes. The diabetes of early life seems based upon profound functional disturbance or the results of infection; that of later life, upon the consequence of degenerative changes in structure, perhaps in the main, arteriosclerotic. This complex of hyyerglycemia, obesity, hypertension and arteriosclerosis is one of the most important of later life, for in it lie seeds of early decay. The early discovery of tendencies toward this complex is within the capacity of any clinician with adequate laboratory equipment and means much to the intelligent patient willing to co-operate in attempting to ward off the consequences of neglect or of ill advised treatment.

TREATMENT: In the management of essential hypertension much can be accomplished by education of the patient. Not infrequently, therapy is a problem in psychology. It is characteristic of patients with this malady to carry on under pressure. They work hard, and, if they play at all, play hard. They are those who get things done. Much of their energy is wasted in the mobilization of all their forces for trifles. One who always works "on his nerve" is laying the foundation of chronic vascular spasm that means eventual established hypertension. For such the explanation of this danger, the change in attitude toward the daily tasks, the cultivation of an equal mind, the avoidance of unnecessary expenditure of nervous and physical energy; these are all important.

REST: The influence of rest upon high blood pressure is well known and has been chiefly studied by Mosenthal.[12] Within a few minutes of relaxation, both systolic and diastolic pressures begin to fall; the drop in systolic pressure being much greater than that in the diastolic. If the rest is prolonged for several days, a still greater fall in pressure is had, but always the decline in diastolic pressure lags behind that of the systolic. Exceptional cases are little influenced. After resuming activity, the blood pressure tends to regain its former level but often some time elapses before this occurs. A period of rest and relaxation in the middle of each day is favorable. The growing habit of afternoon tea has much to recommend it. In cases exhibiting signs of cardiovascular strain—imminent or declared—the enforcement of a rest day once a week is of the greatest benefit. This may be spent in bed, or if the latter is irksome, in the quiet of a library or other environment, from which the ordinary irritations are excluded.

EXERCISE: Exercise, if well within the limits of circulatory capacity, lowers blood pressure. Strenuous forms of competition, such as tennis,

9. Rose, R. H.; N. Y. M. J.; 1922. CVX: 752.
10. Rosenbloom, J.; Journ. Lab. & Clin. Med., St. Louis, April 1922. VII; 7, 392.
11. Mosenthal, H. O.: Med. Clin. No. Amer.. 1922.
12. Mosenthal, H. O.; Med. Clinics No. Amer., May 1922. V. 6. 1139.

TABLES SHOWING RELATION OF BLOOD PRESSURE TO WEIGHT AND GLYCEMIA.

	Weight	B. P. Systolic	B. P. Diastolic	Glucose, %	Urea N². Mg. per 100cc.	Uric Acid. Mg. per 100cc.	Creatinin. Mg. per 100cc.	Chlorides. Grams per liter.	Symptoms.
Man, 62.									
Sept. 30, 1921	174	170	95	.140	16.66	3.26			Cardiac symptoms.
Oct. 14, 1921	171	160	100	.150					
Nov. 11, 1921	166	160	95	.148					
Dec. 1, 1921	158	120	80	.140	17.5	6.75	2.00	4.78	No cardiac symptoms
Jan. 10, 1922	158	130	90	.140	19.00	4.43	1.50		
Mar. 7, 1922	158	135	90	.117	20.00	3.75			
May 6, 1922	156	140	100	.117	20.00	3.5	1.20	4.78	
Sept. 1, 1922	158	145	90	.125	11.60	5.00	1.11	5.44	No cardiac symptoms
Man, 52.									
Mar. 25, 1920	215	146	88	.163					Obesity, furuncles.
April 14, 1920	208			.101					
May 15, 1920	205			.094					
Oct. 20, 1920	195	112	72	.125					
Feb. 17, 1921	191	114	62	.129					
Jan. 3, 1922	196	132	77	.111					
Jan. 23, 1923	189	122	76						

	Weight	B. P. Systolic	B. P. Diastolic	Glucose, %	Urea N². Mg. per 100cc.	Uric Acid. Mg. per 100cc.	Creatinin. Mg. per 100cc.	Chlorides. Grams per liter.	Dye, %.	Symptoms.
Man, 57.										
July 7, 1920	216¼	190	100	.188	12.41	5.77	1.76	7.97	62.7	Palpitation, Pericordial distress.
October 12, 1920	205	160	90	.098	13.39	3.55	2.14	5.23		No cardiac symptoms.
Mar. 10, 1921	208	154	90	.114				4.97		Laxness in diet.
July 6, 1921	215	160	90	.133	13.8	4.16	1.61	4.95		
Woman, 64.										
July 28, 1920	166¼	190	100	.246	19.55	3.56			66.6	Dyspnoea, edema.
		210	110							
Oct. 15, 1920	160	150	90	.104		2.7				No cardiac symptoms.
Jan. 15, 1921	160	165	90	.095						Laxness in diet.
Woman, 50.										
Dec. 6, 1920	165	160	95							Cardiac symptoms
Feb. 5, 1921	165	170	90	.200	11.14	2.38	1.20	4.47		
Mar. 11, 1921	153	160	95							
Apr. 11, 1921	154	140	70	.117						No cardiac symptoms.
Woman, 56.										
Nov. 22, 1922	164	170	90	.166	15.					Dyspnoea.
Jan. 3, 1923	153½	160	90	.143						Systolic at Apex.
Jan. 16, 1923	152	140	70	.133						Systolic persists.

are to be avoided, but golf is ideal. Walking and riding are also of benefit. The effect of mild exercise, after a possible primary slight rise of blood pressure, is vaso-dilatation and a general fall which lasts for some time. The advice that the patient may safely exercise well within the limits of dysponea or of fatigue can be given without hesitation.

DRUGS: These are of minor importance. To aid in release from excessive nervous tension, chloral is useful and may be given over long periods without fear of impairment of myo-

cardial efficiency. Occasionally a case will seem to do well with small doses of the iodides, 5 to 10 grains daily. The nitrites are of little use except in the emergencies of the later stages of the disease. A drop of *spiritus glonein* on the tongue at bedtime may hasten the vasomotor relaxation induced by rest.

DIET: Diet may be all important. The physician should be wary of prescribing an abnormal or ill balanced diet unless there is ample reason. Most adults, as most children, do best on a balanced ration. If chemical examination of the blood shows no retention of the products of nitrogenous katabolism, no excess of glucose or of chlorides, and, if survey of renal function exhibits no defects in the capacity of the kidney to excrete nitrogen or salts or glucose, there is no reason for depriving an individual of any important class of food material. Means are at command for adequate chemical control of diet and these should be used. If, under properly controlled conditions, there is excess of nitrogenous crystalloids, or of chlorides, or glucose, the indications are clear.

The question of weight in relation to cardiovascular, renal or pancreatic strain, needs little elaboration. Experienced actuaries are most hesitant in taking risks in those above weight. It has been well said that one should gain weight up to the age of 30: between 30 and 40, he may either gain or lose a little: but that, after 40 he should begin to lose: and, by 55, if he is to live long, should be real thin.

Such a life schedule of weight keeps pace with the average condition of heart, vessels, kidneys and pancreas. These vital organs undoubtedly reach their highest efficiency between 20 and 30. They probably maintain this efficiency but little impaired until 40. After 40 there is a decline, which after 50 may quite steep. The wise man will adjust his bulk of body to the declining efficiency of the vital organs rather than heap up added burdens. In failure to heed such a simple law, many sow the seeds of arteriosclerosis, of myocardial failure, of diabetes, of hypertension.

The medicine of the future is preventive: curative medicine in most organic diseases is a failure. By the periodic survey, which any well trained practioner with use of a few modern laboratory methods is competent to make, pathologic tendencies can be detected in their incipiency and often controlled. Such surveys are not the prerogative of any commercialized institution, but should be a part of the routine care of intelligent individuals by the family practioner or by some one selected by him. Responsible and authoritative opinions are not to be had from any other source. In the symptom quartet, hypertension, obesity, diminished tolerance for carbohydrate, and arteriosclerosis, lurk many of the dangers of middle life; the consequence of which can be postponed or abolished by scientific care.

SUMMARY: 1. Rise in either systolic or diastolic blood pressure is a symptom of varied, though unknown etiology.

2. The clinical conditions with which high blood pressure may be associated are: certain types of nephritis, some forms of arteriosclerosis, certain toxemias of pregnancy, examples of hyperthyroidism, of aortic insufficiency and of increased intracranial pressure.

3. A larger group exists independently of other conditions heretofore described. These are classified as the essential hypertonias. As clinical study develops, this group will doubtless be subdivided. Such an attempt is made in the present study.

4. A group characterized by the symptom quartet: hypertension, hyperglycemia, obesity and arteriosclerosis is considered in detail. The relation of these symptoms to faulty diet, particularly to an excessive ration of carbohydrate, seems clear in the cases cited. The importance of reducing the weight of the overweight hypotonias should be stressed.

5. Periodic health surveys should be part of the routine care of individuals by the practitioner. Such surveys are not the prerogative of any commercialized institution.

49 *East 53rd Street.*

TRANSFUSION OF BLOOD.*

By CARRINGTON WILLIAMS, M. D., Richmond, Va.
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The transfer of blood from one individual to another has been recognized since the earliest days of medicine as a valuable therapeutic procedure, and attempts to accomplish it have been made since the middle ages. In modern surgery the greatest improvement in technic was made by Crile when he introduced his cannulas for direct anastomosis of an artery of the donor to the vein of the recipient.

*From the Department of Surgery, Medical College of Virgina.

Read before the Tri-State Medical Association of the Carolinas and Virginia, February, 21, 1923.

This method, or some modification of it, remained in quite general use until about ten years ago, when it was demonstrated that the transfer could be made safely by collecting the blood in a suitable receptacle and introducing it into the recipient before clotting occurred. At about the same time, it was found that anticoagulants could be added to the blood as it was collected, and the transfer made in a more leisurely manner. There has been during this time a vast amount of literature on the subject, written by advocates of many methods, among them Kimpton and Brown, Lindeman, Satterlee and Hooker, Lewisohn, Unger, and others too numerous to mention. These authors described methods which at once established transfusion as a practical and popular procedure. Moss added tremendously to the safety of the procedure by applying blood grouping as a necessary test before the transfusion.

The conception of the blood as an organ of the body should put transfusion of blood in the group of surgical procedures for organ transplantation. Fortunately, we are transplanting a part of an organ easily obtained, easily introduced into the recipient, and easily nourished. This conception of transfusion would seem to give a sounder basis for study of the procedure, and a safer attitude for the practitioner, for it is not devoid of danger, than would classing it with the many modern intravenous medications.

If, therefore, we class transfusion of blood with the transfer of tissue, we must recognize the unsatisfactory state of transplantation surgery, and recognize transfusion as one of its few satisfactory examples. For transplantation of tissue, the patient himself is usually the donor. We have all seen the unsatisfactory results of skin grafting with homografts even after matching the blood group of the recipient, yet autografts are almost always successful. In transfusion of blood, we must necessarily use the homograft except in rare instances, which will be mentioned later.

We know that the life of the red blood cell in the normal individual is quite short, yet the limits of our knowledge do not permit an accurate estimate of this time. Rous,[1] after reviewing the work done by others, concludes that about 1/15 of the total blood volume is destroyed daily; the average life of a cell must therefore be about fifteen days.

We know that introduction of foreign blood into an individual stimulates certain functions of the blood, as the subcutaneous injection of a small amount of blood for hemorrhage of the newborn, accelerates clotting, and we believe that introduction of larger amounts of foreign blood stimulates the blood producing organs to greater activity. In addition to this stimulating action, however, we must consider the blood transplanted as an active part of the functioning blood. Ashby,[2] at the Mayo Clinic, has demonstrated that transfused cells live longer than the normal "home grown" cells, for she finds from 40 to 50 per cent. of these are present after 28 to 52 days, and some few cells after 100 days. It is safe to assume that cells surviving for this length of time must have had active function. This active blood is particularly important in the secondary anaemias, but it must also play a part in relieving the over-worked bone marrow in cases of pernicious anaemia.

Foreign blood is useful in diseases in which the blood is greatly depleted. It is the treatment of choice in pernicious anaemia. This disease, as is well known, is characterized by remissions at times of long duration, during which, the patient shows startling improvement. It is generally believed that transfusion of blood will initiate these remissions, and thereby prolong the life and usefulness of the patient. Anders[3] reports a typical case in which the red count rose from 720,000 to 2,050,000 after transfusion, and a similar improvement one year later. He collected 450 cases from the literature, 56 per cent. of which were much improved by transfusion. He very rightly warns us to use transfusion only as an adjunct to the usual medical and hygienic treatment of the disease.

In the leukaemias, transfusion seems to do harm rather than good.

In secondary anaemia, transfusion gives brilliant results, particularly where the cause of the anaemia can be corrected. It is not infrequently a life-saving procedure directly, or indirectly, by preparing a patient for a necessary operative procedure. Patients greatly debilitated by malignant disease can be temporarily made more comfortable by addition of blood to their circulation.

Transfusion is frequently necessary in shock, yet we must be extremely careful that we do not add to the shock by using incompatible blood.

In treating sepsis, transfusion of blood from

a donor immunized to the infecting organism has been tried with results no better than when the donor was not so immunized. Polak[5] reports favorable results from frequent small transfusions in puerperal sepsis. In general, however, transfusion does little good in treating septicaemia from other causes.

In the hemorrhagic diseases, the clotting time is shortened by transfusion or by injecting foreign blood under the skin.

The results of transfusion in general are admittedly good; what then are the objections? Aside from the technical difficulties, the dangers of transfusion, while few, are very real:

1. Emboli may be introduced, either air, clots, or small foreign particles. It is my own impression that many of our reactions are due to minute emboli. This danger should be eliminated by careful technic regardless of the method used.

2. Transmission of disease from the donor. This can be obviated by careful selection and examination of the donor.

3. Dilatation of the heart. We can avoid this by careful administration of the blood.

4. Reaction to incompatible blood.

These dangers have been enumerated by Pemberton.[5] The reaction of the patient is the most frequent and most serious danger. It varies in severity and duration. The typical reaction consists of a chill, rapid weak pulse, varying degree of collapse, difficult breathing, nausea and vomiting, and rapid rise in temperature. Severe reactions are usually due to hemolysis of red cells, and are followed by hemoglobinuria. Drinker and Brittingham,[6] after careful observations and experiments, conclude that reactions are due to changes in the red cells, and to some extent in the platelets which occur soon after removal of the blood from the circulation. A severe reaction in a greatly debilitated patient is a terrifying occurrence, and rightly so, for not a few deaths have resulted. Unfortunately, these deaths are usually not reported. Bernheim[7] reports two deaths and knows of four unreported. The author knows of four deaths in the hands of thoroughly trained men. All of these followed transfusion of citrated blood.

Patients who have had repeated transfusions, may develop a sensitization to the blood of a particular donor, or to any donor. In repeated transfusions, it is therefore quite important to repeat direct matching of the bloods for hemolysis and agglutination. Even when no incompatibility is found by the laboratory, these repeated transfusions should be given carefully, and discontinued if the patient notices any unpleasant symptoms.

In contrast to this type of reaction, we have observed quite a favorable reaction in a number of patients. This reaction consists of a prompt decline of temperature after transfusion in febrile patients. One striking case, was a boy of ten years whose right kidney had been ruptured in an automobile accident. His condition was so serious from loss of blood, that an operation was considered not advisable. The hemoglobin was 12 per cent. with a correspondingly low red count. His temperature ran from 102 to 103 for several days until a transfusion of 500 c.c. of whole blood brought the hemoglobin up to 35 per cent., and the temperature to normal. After a few days, he bled again and the temperature rose, but promptly came down after another transfusion. This cycle was repeated twice again before his condition would permit an operation, which finally was successfully performed. Another case showing a similar favorable reaction, was a woman who had bled to a hemoglobin of 20 per cent. from an incomplete abortion. There was some delay in securing a suitable donor for her, and she ran a temperature from 102 to 104 without evidence of infection, until she was given 500 c.c. of whole blood, when the temperature rapidly became normal. One week later, she again bled freely, and with the bleeding had a rise of temperature. This time a similar transfusion from the same donor gave her a severe chill and sharp rise of temperature followed by a rapid decline to normal and good recovery. No infection was found to account for the fever in these patients. The intimate association of their anaemia and rise in temperature is extremely interesting.

The patient's own blood would be ideal for transfusion, but obviously is rarely available. Grant and Frazier[8] have reported cases where a long bloody operation was anticipated by bleeding the patient, citrating the blood and keeping it in the ice-box until needed. Schweister[9] has reported collecting blood from the abdominal cavity in cases of ruptured ectopic pregnancy, and introducing it into the vein of the patient. He reported one death following such a transfusion. This procedure seems to be quite unscientific, for much of this blood is already clotted, and minute emboli may

easily escape the filters which are available, while collecting and preparing the blood must severely damage the cells. It would appear quite unnecessary also, since Matthews[10] claimed years ago that much of this blood is returned to the circulation by absorption, and Siperstein and Sansby[11] have recently demonstrated that this absorption is probably quite rapid: they suggest the use of intraperitoneal injection of freshly citrated blood. The rapid absorption of saline solution from the peritoneal cavity has been amply demonstrated.

The selection of the donor is extremely important. In the Hospital Division of the Medical College of Virginia, we have a group of "professional" donors from the student body. These young men have been grouped by the method of Moss: the quality of the blood is tested and the Wassermann reaction is done. After typing the recipient, the bloods are matched against each other for hemolysis and agglutination. We do not accept a Group IV as a universal donor, and would use such a donor for another group only in an emergency. Occasionally, by direct matching of patient's and donor's blood, we find a donor unsuitable although in the same group with the patient. We have not had any severe reaction in a donor. Occasionally there is a short period of faintness, but even this is not observed if the donor is kept quiet. We rarely use more than 500 c.c. of blood, and let the donor go home after a few hours. We have used the same donor twice in one week without any unfavorable symptoms.

It is quite important to consider carefully the method to be used. It is safe to say that whole unadulterated blood is the method of choice by the great majority. It has been definitely proven that reactions are much more frequent after use of citrated blood. Bernheim[7] has studied the problem carefully, and says that after the citrate method, we may expect a reaction in 20 per cent. to 40 per cent. of cases, while after whole blood transfusion, there will be about 5 per cent.

It is impossible to give figures on mortality from transfusion, because deaths are rarely reported, but, as noted before, we must remember that no inconsiderable number have occurred. The small percentage of reactions to whole blood transfusion is the brief for this method. Against this, we must consider the ease and simplicity of the citrate method. It can be given by one man without assistance if necessary, and under any conditions. To successfully transfer whole blood, the patient must be in a hospital and several assistants are needed. Bernheim says that the greatest good for the greatest number will come from the use of sodium citrate transfusion, but advises the use of whole blood where it is possible, and always in greatly debilitated patients. Our practice, in the hospitals of the Medical College of Virginia, is to use whole blood unless the patient is too ill to be moved to the operating room, and then we use citrated blood on account of the ease of administration.

The direct transfer of blood from artery of donor to vein of the patient is now rarely done. In expert hands, it may be satisfactory, yet even then we are ignorant of the amount of blood actually transferred. In view of the considerable technical difficulty of this procedure, and the trauma to the donor, it would seem that the more simple indirect methods should be used. Horsley, Vaughan and Dodson[12] have recently advocated the direct method and reported a number of favorable cases.

In conclusion, the methods used and found satisfactory should be briefly mentioned:

For the transfer of whole blood, we use the syringe-cannula method described by Lindeman[13] ten years ago. His cannulas should be used where it is possible in spite of the moderate difficulty in introducing them into the vein. Not infrequently we have to cut down on the vein in order to insert them, particularly in debilitated patients and in children. The syringes are the standard 20 c.c. Record. These syringes are filled rapidly and transferred to the patient before clotting can occur; they are then washed in three basins of salt solution and are again ready for use. From six to twelve syringes are necessary.

For the citrate method, we use the technic described by Farr and Gilroy,[14] in which the blood is collected in a flask containing the citrate solution. This flask is gently agitated as the blood runs in and is inverted when the blood is introduced into the patient by gravity.

To summarize, we believe that transfusion is of great value in the treatment of chronic anaemia and certain hemorrhagic diseases, and that it is a life-saving measure in acute severe anaemia from bleeding. The method of choice is that which transfers whole blood in the simplest manner with the least trauma to the donor and recipient. The value of the citrate method must be recognized, and it must be

used under certain conditions. Transfusion should be considered as a surgical procedure, and all of the preliminary tests and final technic should be carried out with the greatest care.

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400 *East Franklin Street.*

TREATMENT AND PROGNOSIS OF CHRONIC CARDIAC LESIONS.*

By T. N. DAVIS, M. D., Lynchburg, Va.

Whatever the cause of cardiac disease, decompensation means failure of the heart's muscle. The treatment, whether aimed at prevention or restoration, should be directed first, to conserve the heart's energy and second, to build up a reserve to meet the varied demands made upon it under the ordinary conditions that a patient experiences; thus, the basic principle of treatment is rest, whether accomplished by avoidance of strain, slowing up of body functions, or digitalis. In the patient with a cardiac lesion already known but whose heart is functioning normally, there are certain rules to follow that he may control his reserve force and steer from decompensation.

We will consider exercise. It is known that careful and well directed exercise accomplishes several favorable ends, but before instituted, the presence of infection must be decided, as nothing would so readily bring on decompensation as the combination of infection and exercise. A leucocytosis and temperature over 99.6° per rectum for several days are clear signs of reinfection; with these findings absolute rest in bed is first and last the only treatment until the above signs are negative. The fact should be emphasized that broken compensation is practically always the direct result of reinfection of the endocardium with physical strain acting secondarily, lowering the resistance of the myocardium. Having this in mind, how vital it is in our treatment that we remove diseased tonsils and teeth and clean up focal infection wherever apprehended. Without enumerating the usual advantages of muscular exercise, we know that the same physiological laws hold good in the cardiac patient whose compensation is intact; whether we use massage or active and passive motion, the first effect on the heart is increase in its rate, then quickened respiration and rise in the blood pressure; by resistance offered in the peripheral arteries the diastolic pressure is raised and the circulation in the coronary arteries is improved, there is increase of the flow in the coronary arteries out of all proportion to the pressure in them; the heart obtains a richer supply of blood and muscular tone is heightened. Thus by gradual exercise we can build up a reserve, not equal to the possibilities of the normal heart, but sufficient to meet the needs of a modified life. Appearance of the face, rate of respiration, the time it takes the pulse to return to normal are signs that determine the amount of exercise that is necessary. In the beginning, interruptions or rest periods must be frequent and the limit of toleration never approached; the patient should not talk while walking, or walk against the wind; as training improves his condition games without competition can be prescribed. In children a mild supervision of their play acts better than the attempt at repression. Inactivity and a sedentary life may prove as harmful to the patient as his zeal that urges him to reach a former level of activity in work and recreation. When exercise has been instituted it must be regular and frequent.

In impending or actual decompensation get the patient to bed. Orthopnoea may prevent complete dorsal relaxation; here a semi-erect position will be of advantage in gravitating the contents of the blood vessels to the lower extremities; this posture permits the blood to drain from the myocardium. Such grave signs as cyanosis and collapse call for venesection; the withdrawal of as much as thirty ounces will give time for quicker stimulation as ether or caffein, etc.

Rest alone may be all that is necessary to control symptoms; it gives the heart time to hypertrophy to meet the new situation. Where there is dropsy or anasarca, digitalis will act

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more quickly when effort is made to eliminate through the bowels; calomel first, then magnesium sulphate, an ounce in black coffee every morning for three days, when digitalis is commenced. I believe it is fairly well comprehended that larger doses of digitalis must be administered; when so given there is a saving of several days in the approach to compensation. The massive dosage advocated by Eggleston is not suitable usage outside the hospital. Remember that ordinarily it takes two to three drops as measured by a medicine dropper or from the bottle to make the official minim of the U. S. P. tincture. Ten minims should be given three or four times a day, until digitalization is attained or signs of heart block—nausea, vomiting, dropped beats—appear. The ventricular rate should be around seventy; other signs of effectiveness of the drug are increase in the output of urine and increase of pulse pressure. After the above has been established, a proper dose to keep up the good result must be continued. The elimination of digitalis or average rate of disappearance from the body is twenty-two minims per day, so that ten minims morning and night can be safely given indefinitely. The patient may find that he cannot be comfortable without a daily dose of digitalis, probably ten minims. It is remarkable how in some cases the cardiac equilibrium is kept by a daily dose, and upset when left off. If digitalis fails to keep the patient comfortable, it may be tried intravenously for several doses; a new hold, so to speak, may be gained, the myocardium once more responding. Subsequently oral administration may be resumed.

Edema if uninfluenced by elimination through the bowels and digitalis medication may be overcome by the administration of theobromin sodio-salicylate. Twenty grains should be given every four hours for four doses the first day: the following day four doses of thirty grs., then stop for several days, when it can be given again if edema accumulates.

Morphine should never be withheld from these patients; it is supreme for the psychic and physical distress, relieving pain and allowing sleep which is the thing most desired. Nitroglycerine can be relied upon to allay lesser symptoms of dyspnoea, anginoid and constrictive sensations in the chest. When the outlook is hopeless on account of absolute exhaustion of the heart, morphine and nitroglycerine still relieve until the end.

The Karell treatment, consisting of milk about six ounces every four hours, is an ideal diet when the patient is first seen; it may be reinforced by the addition of milk sugar, a teaspoonful with each feeding, the sugar giving more nutrition and enhancing the diuretic action of the milk. Often the cardiac patient has a renal insufficiency and acidosis may be a factor in the production of dyspnoea. The addition of sodium bicarbonate and milk sugar with the four hour feedings increases the therapeutic value of the treatment. The Karell diet can be given five or six days if of benefit. When a change is decided upon, the choice would be a baked potato replacing one or two feedings of milk. Gradually other articles are added: a small piece of steak or lamb chop and a slice of tomato are particularly appetizing after the milk cure. Salt should not be allowed except what is naturally contained in the food. Diet is next to exercise in importance. A cardiac patient should have small meals, four to five a day, rather than three of the usual size. Over filling of the stomach may be disastrous: a patient should so eat that on arising from the table he is not conscious of his stomach; on the other hand, going a long time without food is equally as bad as over eating. Try to keep the patient ten to fifteen pounds under his former weight.

Prognosis should be based more on the cause and type of heart lesion. In the rheumatic heart the number of attacks and number of valves involved concerns us first; then the age of the patient. Prognosis is better if the patient is beyond twenty-one, as reinfection is less apt to occur. Involvement of the mitral valve-stenosis, the usual lesion of rheumatic endocarditis, while crippling the heart, not necessarily limits a patient's activity. It is possible for him to go on through several decades without symptoms at all; indeed it is only where arterio- or cardio-sclerosis sets in that there are objective symptoms of a heart lesion. Many women pass through pregancy without their physician aware of this lesion in them. On the whole, though men tolerate valvular defects far better than women, the latter withstand hypertension and cardiac hypertrophy with little inconvenience.

Height and weight should be taken into account. Generally the tall and large person has

not the same prognosis as the small and lean type. This latter individual is almost, sure to live longer.

In the luetic heart which practically is secondary to a luetic aortitis, basing the prognosis on the morbid anatomy,—aneurism with rupture, coronary involvement with occlusion, you can say the outlook is bad. If anticipated, the arteriosclerotic or degenerative type of heart offers a better outlook; unless interrupted by the advent of apoplexy, angina pectoris or nephritis, these patients have few discomforts, except those of encroaching old age.

Prognosis in the hypertrophied heart of chronic nephritis is entirely dependent upon the extent of disease in the kidney. If the heart is normal, with the exception of enlargement, it does not give cause for concern, death usually being due to uremia, or apoplexy the result of rupture of an artery from hypertension. Much can be learned from the response of a heart to rest and digitalis. The result of treatment is in direct proportion to the integrity of the cardiac muscle; when drug and dosage are potent and there is little or no response, the prognosis can be counted poor. Response also to exercise, by the degree of dyspnoea, gives valuable information.

Where foci of infection are discovered concomitant with the heart findings, not only is their removal indicated but the prognosis is usually bettered likewise.

No single symptom or sign that we assume points to an ill functioning heart can enlighten us in regard to termination; the physician should determine prognosis from the signs and symptoms as a whole which is equivalent, practically speaking, to the patient's response to the routine of his daily existence. The one exception to the above statement is the finding of pulsus alternans which is ominous, death occurring generally within two or more years.

CHRONIC CARDIAC DISEASES—PATHOLOGY AND DIAGNOSIS.*

By F. C. Rinker, A. B., M. D., F. A. C. P., Norfolk, Virginia.

Chronic valvular heart disease is found in general practice to exist in about five per cent. of all cases.

I will attempt to consider first the pathology and diagnosis of the various valvular lesions, confining myself entirely to the heart proper, and lastly, I will take up the general pathological effects of these lesions on the musculature of the heart.

It is frequently argued that careful study of valvular lesions, from the standpoint of differentiation of the various valves affected, is of minor importance and that loss of compensation is the all important feature. While this is true to a certain degree, there are differences in the symptoms and signs of the many lesions and, therefore, differences in the resulting pathology and the prognosis. This should impress upon us the necessity of closely studying each valve lesion.

Let us consider the valvular lesions in the following order:

1. Mitral Stenosis.
2. Mitral Insufficiency.
3. Aortic Stenosis.
4. Aortic Insufficiency.
5. Tricuspid Stenosis.
6. Tricuspid Insufficiency.
7. Pulmonary Stenosis.
8. Pulmonary Insufficiency.

I. Mitral Stenosis.

Pathology: There are three varieties (a) Infectious, (b) Arteriosclerotic (c) Congenital.

Of these, the first is the most common. In this type the edges of the mitral valves are roughened by vegetations, the result of endocardial inflammation. In addition, there is thickening of the valves which results in difficulty in closure.

The arteriosclerotic type is met with more commonly in old age and is merely a thickening of the valve leaflets due to the tissue change of age.

The congenital form is rare and may be due to mal-development during fetal life or may be due to hereditary syphilis.

The earliest effect of mitral stenosis is hypertrophy of the left auricle followed by dilatation and finally there is hypertrophy and dilatation of the right ventricle.

Diagnosis: There is usually little difficulty in making a diagnosis in cases of mitral stenosis. The thrill and presystolic murmur heard over the precordial area not transmitted are the main diagnostic points. We must always be alert, however, for the murmur is variable as to time; it may be presystolic or it may be heard in diastole, it is *not* transmitted.

Mitral stenosis is to be differentiated from:

1. That of aortic regurgitation.

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2. The Graham Steele murmur which is heard over the left third and fourth interspaces.

3. The murmur of pulmonary insufficiency which cannot be differentiated from the Graham Steele murmur.

4. Tricuspid stenosis, a very rare condition.

5. The so-called Austin-Flint murmur heard in some cases of advanced aortic regurgitation.

II. Mitral Insufficiency.

Pathology: The post-mortem changes found are; sclerotic, vegetative and ulcerative alterations of the mitral cusps. The left auricle is at first hypertrophied and then dilated and there is dilatation and later hypertrophy of the ventricle.

Mitral regurgitation may also be the result of dilatation of the heart without endocardial disease known as relative insufficiency.

Diagnosis: Systolic murmur heard best over the apex of the heart and transmitted to the left axilla and to the angle of the left scapula are diagnostic signs. The murmur may, however, be heard best at the base of the heart in some cases. In addition to these signs there is usually enlargement of the left heart, and a marked accentuation of the second pulmonic sound.

The murmur of mitral regurgitation is seldom mistaken for any other organic heart lesion. It must, however, be differentiated from the hemic murmurs, the functional murmurs due to cardiac position adhesions, etc., and from arteriosclerotic murmurs, heard so frequently at the base of the heart, none of which are transmitted. It must also be distinguished from the cardio-respiratory murmur which is frequently transmitted but is heard only during respiratory excursion. In rare instances acute pericarditis and patent ductas arteriosis offer puzzling differences, but the nearness of these murmurs to the ear and the to-and-fro quality distinguish mitral insufficiency from them.

III. Aortic Stenosis.

Pathology: The aortic leaflets are found to be thickened and covered with vegetations or ulcerations; in some instances there are found calcareous deposits in the cusps. The valves feel hard and sclerosed.

The left ventricle first hypertrophies and may later dilate. When dilatation of the left ventricle does occur there results a relative mitral insufficiency.

Diagnosis: The region of the base of the heart has been well named "the region of romance." Aortic stenosis is the one organic heart lesion in which the greatest care should be exercised in diagnosis. The murmur is heard best over the second interspace to the right and is transmitted to the vessels of the neck; it is systolic in time and there can usually be felt a thrill over the aortic area. The second aortic sound is feeble or absent and the left heart is enlarged.

Atheromata of the aorta, pressure on the aorta from mediastinal tumors, hemic murmurs and pulmonary stenosis must be differentiated from aortic stenosis.

To repeat, there are four findings which are requisite as a basis for the diagnosis of aortic stenosis, as follows:

1. A systolic thrill at the base.

2. A slow deliberate pulse.

3. A systolic murmur heard at the second right interspace and transmitted to the vessels of the neck, and

4. A feeble or absent second aortic sound.

IV. Aortic Regurgitation.

Pathology: The pathology differs somewhat with the cause. In the syphilitic cases there is an inflammation of the small arteries at the base of the valves and plaques are found on the valves. In the *infectious* cases vegetations are found on the valve edges, and in the *arteriosclerotic* types there is a sclerosis of the cusps. The left ventricle first dilates and then hypertrophies. Aortic insufficiency causes more marked enlargement of the left ventricle than does any other heart lesion.

Diagnosis: The diagnosis of aortic insufficiency is usually easily made In no other cardiac lesion are there as many peripheral vascular signs which aid in the diagnosis as are found in aortic regurgitation. The cardinal points in diagnosis are:

1. A murmur, occurring during diastole, heard best over the second right costal cartilage and transmitted downward and to the left, to the apex of the heart.

2. Marked increase in left cardiac dullness.

3. Peripheral signs: (1) Corrigan's water-hammer pulse, (2) Blood pressure changes in arm and leg, (3) Capillary pulse, (4) Duroziez sign (pistol shot murmur).

This murmur is sometimes taken for mitral stenosis, pulmonary insufficiency, aneurysm, and mediastinal tumors.

Electrocardiogram is of value and shows

evidence of left ventricular preponderance of marked degree.

V. Tricuspid Stenosis. The pathological findings are indentical with those found in mitral stenosis affecting the tricuspids.

Diagnosis: This valve lesion is rarely recognized except at autopsy.

The region of the heart dullness is increased to the right due to dilatation of the right auricle, sometimes there is a presystolic thrill. There is a short presystolic murmur heard just to the right of the sternum in the fifth interspace.

Mitral stenosis is frequently associated with tricuspid stenosis and it is most difficult to differentiate the two. In the former the murmur is heard loudest about the left nipple region of the chest while in the latter the murmur has its greatest intensity to the right of the sternum and in the mid-sternal region in the neighborhood of the fifth interspace.

VI. Tricuspid Insufficiency. The pathology is similar to that described under mitral insufficiency.

Diagnosis: 1. There is bulging of the precardial region at times. 2. Cyanosis and venous engorgement are present. There is marked venous pulsation. 3. A systolic pulsation can frequently be felt over the right side of the heart. 4. Pulsation of the liver when felt is pathognomonic. 5. Enlargement of cardiac dullness to the right. 6. The electrocardiogram shows right ventricular preponderance.

VII. Pulmonary Stenosis: This lesion is almost always congenital.

Pathology: The post-mortem changes are identical with those found in aortic stenosis. Hypertrophy of the right heart occurs and is soon followed by dilatation of the auricle and ventricle.

Diagnosis: A systolic thrill felt at the base of the heart, increased cardiac dullness to the right, and a systolic murmur with its maximum intensity heard over the second left interspace close to the sternum constitute the cardinal signs of diagnosis.

Basal heart murmurs should always be carefully studied before making a diagnosis of pulmonary disease because this condition is rare and functional basal cardiac murmurs are frequent.

VIII. Pulmonary Regurgitation: This condition is rare. Up to 1910 Norman Pitt had been able to collect only ten cases reported in the literature.

Pathology: The changes found in the pulmonary cusps are identical to those found in cases of aortic regurgitation.

Diagnosis: A diastolic murmur, best heard at or near the left second costal cartilage transmitted downward only slightly with increase in dullness to the right at the base of the heart, is the diagnostic sign.

The absence of left ventricular hypertrophy and the peripheral signs of aortic regurgitation assist in differentiating it from this lesion.

Having considered each valvular lesion of the heart separately, let us now turn our attention to the effects of these various conditions upon the nervous mechanism and musculature of the heart.

To quote Mackenzie: "Unfortunately, most of the changes that occur in the myocardium show no signs or symptoms by which we can recognize them. Nevertheless, there are a number of manifestations which we can refer to the muscle of the heart, such as various irregularities of the heart's action, changes in the size of the organ, and it may be the character of the sounds." (Mackenzie, Sir J., Lyd. 1916. 121.)

Definite evidences of these changes may not be demonstrable, but by study of the heart's efficiency we are able to obtain indirect evidence.

The most important pathological conditions arising in the myocardium are dilatation and hypertrophy. These frequently result in irregular action of the heart rhythm.

Dilatation of the Heart is manifested by dyspnoea, vomiting, syncope, and the usual decompensating signs of acute cardiac failure.

This condition may result from sudden strain or it may be the result of valvular incompetency occurring particularly early when strain is thrown on a chamber of the heart during diastole, as in aortic regurgitation.

The diagnosis of such a condition is not difficult.

Hypertrophy of the Heart: Clinically, this condition renders a more difficult problem than does dilatation. The electrocardiogram furnishes an important means of determining the preponderance or hypertrophy of a given chamber of the heart and renders information valuable from the viewpoint of both therapy and prognosis. For example: In

cases of left ventricular hypertrophy or preponderance there is an inversion of the R-wave in the electrocardiogram in Lead-*three*, and where there is hypertrophy of the right ventricle the electrocardiogram shows inversion of the R-wave in Lead-*one*. Should the auricles be hypertrophied, then the P-wave of the electrocardiogram is of high amplitude and peaked in more than one lead. These conditions cannot be determined definitely by any other means.

Irregularity in Rhythm: There are two distinct pathological varieties of irregularities which may occur in the heart: Auricular Fibrillation and Heart Block.

Auricular Fibrillation is, as the term implies, a fibrillation of the auricles which beat much more frequently than the ventricles. This is associated with ventricular irregularity. It is due to some alteration or interference with the sino-auricular node or pace maker. The impulses arising in this node are too frequent to be transmitted by the auriculo-ventricular bundle and consequently ventricular irregularity occurs. The auricles do not contract but remain in a state of twitching and act only as reservoirs.

Heart Block: The transmission of impulses through the auriculo-ventricular bundle of His may be interrupted by the invasion of disease in the bundle, or in either of the bundle ventricular branches.

Heart block is complete or partial dissociation of His bundle action. The ventricle does not receive the impulse from the pace maker but assumes an impulse and beats independently, slowly and at times irregularly.

One may assume heart block as a diagnosis whenever the heart rate is less than forty beats per minute. The condition, however, frequently exists with a much more rapid pulse rate and can only be definitely determined by the electrocardiogram.

There are other conditions affecting the cardiac rhythm but time does not permit a discussion of them in this paper.

In conclusion, let me urge that whenever possible, in the study of chronic cardiac lesions, all means of precision be used and that a careful consideration be given the efficiency of the heart muscle in each case.

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X-RAY AND RADIUM TREATMENT OF THE INFECTED TONSILS AND ADENOIDS *

By E. U. WALLERSTEIN, M. D., Richmond, Va.

The subject is one that demands our attention for the tonsil question is one of the most important in our specialty. Daily we are called upon to decide whether tonsils are diseased, their relation to a systemic disorder, and what procedure should be initiated.

At present the standpoint of a large majority of us is that if the tonsil is chronically infected surgical removal is advised, provided there is no grave contra-indication to operation.

A tonsillectomy both from the standpoint of surgical technique and possible complications is a major operation. This idea now obtains in the profession and is gradually being recognized by the laity. Therefore, if there is a non-surgical procedure that will cure infected tonsils it is a most important step forward.

Until recently the other means employed in treating tonsils when tonsillectomy was not done have been tonsillotomy, cauterization, electric desiccation, suction, massage, and topical application of medicaments. These are unscientific from a pathological viewpoint and are rapidly going into disuse.

In studying the effect of X-ray on the susceptibility of experimental animals to cancer it was discovered that cancer could be produced in radiated animals, whereas this was not possible in controls. In seeking for an explanation, it was found that the blood underwent changes: that in the animals treated with X-ray the lymphocytes were markedly decreased in number; and that probably the mononuclear elements of the blood stream bore some relation to cancer immunity.

It was further shown that the roentgen ray has a selective affinity for the lymphoid elements. By properly graduated dosage it was demonstrated that this class of cells could be made to disappear from the blood, leaving the other elements unaffected. This fact was taken advantage of in the treatment of lymphatic leukemia. Based upon these observa-

*Read before the Richmond Society of Ophthalmology and Oto-Laryngology.

tions, Murphy, Witherbee and others at the Rockefeller Institute determined to apply X-ray to the tonsils.

The tonsil parenchyma consists of lymphoid cells arranged in lymph nodules. The character and number of nodules vary in the different types of tonsils. In the large soft tonsil of simple hypertrophy the number and size of the germinating follicles are increased; whereas in small fibrotic tonsil the lymphoid cells are decreased, due to the encroachment of connective tissue.

In the original article Murphy and Witherbee report forty-six cases of infected tonsils treated by the roentgen ray. They pointed out that lymphoid tissue is the most susceptible to X-ray of all tissues except the sex glands. In this series treatment consisted of a single long exposure to the X-ray in all cases, except one which was more frequently treated. The cases were not selected from any special group as far as age or disease due to infected tonsils. A cure was reported in all but four cases. In general there was a definite decrease in size of the tonsil within two weeks, with a further decrease for one to two months.

In a study of the bacteriology made by cultures of the crypts and naso-pharynx in thirty-six cases, the streptococcus and staphylococcus hemolyticus was found in thirty-two cases. These organisms disappeared within four weeks. The beneficial results of treatment are explained by the authors thus, "It seems probable that the disappearance of infection of the tonsils and changes in the bacteriological flora after X-ray treatment are due to the opening up and proper drainage of the crypts which follow atrophy rather than the actual removal of lymphoid tissue." An advantage is claimed over surgical removal in that X-ray treatment completely removes the lymphoid tissue from the lateral and posterior walls of the pharynx.

The adenoids are inaccesible to X-ray treatment on account of their position. To quote the above article "The adenoid tissue is, as expected, in view of the portal of entry used for the X-rays, not so uniformly reduced as the tonsil. This particular aspect of the problem of reducing excessive lymphoid tissue in the naso-pharynx through X-rays is one to which in the near future especial attention will need to be given."

The objections that there is danger of setting up a parotitis or that neighboring tissues will be injured is not a real one, according to these authors, as the dosage is no higher than that used in therapy of enlarged glands of the neck.

They draw the conclusion, "The X-ray method of treating chronic focal infections of the throat, namely tonsils and adenoids, is not only safe and permanent but will more thoroughly and completely remove this focal infection than any other method yet devised, surgical or otherwise, and furthermore the contra-indications for operation in no way interfere with this procedure."

Since this original article appeared reporting the results of using a single large dose, Witherbee has changed the dosage. He now advises multiple applications, the average case requiring eight treatments at two weeks intervals.

Waters and his associates at Johns Hopkins conducted an investigation and report less favorable results than Witherbee. The number of cases studied was twenty-one, including ten children. Seven patients were lost sight of and fourteen were studied thoroughly. Treatment consisted of four X-ray exposures, about two a week for two weeks then a rest of two weeks and a second course of four treatments. Anatomically, by actual measurement, the tonsils were reduced in size in all but one case. The clinical symptoms in the cases of the ten children subsided.

Among the cases treated was one of Sydenham's chorea which was much improved and a case of chronic arthritis in a woman of fifty-six was benefited locally and generally. In this case, interestingly enough, the tonsils were not reduced in size and streptococci were still present at the end of treatment.

An interesting case showing the effect of the roentgen-ray on tonsillar tissue was that of a student with acute catarrhal otitis media. X-ray was applied and after the fourth treatment an X-ray dermatitis developed. Twenty-seven days after the fourth treatment, the tonsils were enucleated and examined by the pathologist. The report was "Pathological section of one of the tonsils showed that apparently the germinal centres were not affected by the X-rays but that the lymphoid cells between the germinal centres disappeared and their place was taken by fibroblasts."

The Hopkins group report "forty per cent. successes of which we have no proof of per-

manence." Their attitude towards the present use of X-ray of systemic absorption is as follows: "It will require many cases to determine the effectiveness of roentgenotherapy in removal of chronic focal infection in tonsils that are giving rise to a general constitutional malady, such as arthritis, glomerular nephritis, etc. In view of results as brought out in the section on bacteriology, it would amount to malpractice to resort to X-ray treatment alone when surgical removal might save the patient."

By careful and repeated serial cultures it was shown that the X-ray cannot be relied upon to cause the disappearance of streptococci.

Eight cases were studied bacteriologically of which seven were found to harbor the streptococcus. In three cases the streptococcus persisted weeks after the termination of treatment.

That cultures from the crypts cannot be depended upon was shown by Pilot and Davis who, out of a series showed sixty-one per cent. streptococci by crypt culture. The cases were later operated upon and cultures taken directly from the interior of the enucleated tonsils showed ninety-seven per cent. streptococci. Furthermore, Bloomfield and Davis have shown that a normal individual, if serially cultured, will eventually show the presence of streptococci in the throat. In the summary they state "It is possible when the technique is perfected roentgen ray or radium treatment will entirely supplant surgical measures in children."

Pacini, in the *Journal of Radiology* for April, 1922, states that the roentgen ray alone is not capable of counteracting all types of infection. He divides abnormal tonsils into three groups and gives a different kind of treatment for each. To the first group belongs the simple hypertrophies of children. X-ray alone is advised for this group. The second he terms the immunological active which he would have us treat with X-ray and the violet ray. The third group is the infected, and for this he advises surgical removal.

The obvious objection to this plan of treatment is that it is impossible to correctly determine to which group any one tonsil belongs.

Simpson, in an article in the VIRGINIA MEDICAL MONTHLY, November, 1921, advises the conjoint use of X-ray and radium. He concludes, "I am positive that I can cause a complete atrophy and disappearance of any tonsil in one to three treatments."

Withers, in the *Laryngoscope* for March, 1922, advocates the use of radium. He points out that radium has the advantage over the X-ray in that the quantity of radiation is not so variable and that use can be made of the beta rays which have a direct bactericidal effect. Moreover, its use, he claims, has none of the dangers of roentgen-therapy.

At variance with the findings above quoted is that of Lederer of the clinic of Beck at Chicago. He writes, "In no case in our series were there any very marked changes and only in children with typical hypertrophied tonsils have we been able to note even a slight change in size." He reports that the bacterial flora was not changed in the cryptic type and that fibrotic tonsils were not affected. It is further pointed out that often a "dry throat" results from treatment.

Coakley, in the latest edition of his book, says "Radiotherapy has been recently advocated, but from our observations and those of others, it may reduce the size of the tonsil, more or less, yet it has not resulted in freeing the tonsil from harboring pathogenic organisms and the consequent local and constitutional effects thereof."

It will be seen that there is no unanimity of opinion. In fact, views are antipodal, varying from that of some who claim that X-ray is an infallible therapeutic measure of universal application to that of others who believe it valueless.

What then should be our attitude? Granted that the roentgen ray and radium can effect a reduction in size of the tonsil, does the simple reduction of size effect a cure? Granted that streptococci can at times be made to disappear from the crypts, has it not been shown that this does not mean a disappearance of bacteria from the parenchyma of the tonsil?

The adenoids, on account of their location, are not greatly affected by the X-ray. Are they not as important or more important than the tonsil in many cases, especially in children?

Consequently, from the evidence adduced to date, I cannot see any indication for the use of either X-ray or radium in the treatment of tonsils, except in those cases in which operation is contraindicated. In such constitutional diseases as diabetes, advanced pulmonary tu-

berculosis, severe cardiac decompensation, hemophilia, etc., it may possibly be of value but otherwise surgical removal is indicated.

114 *North Fifth Street.*

THE BACTERIOPHAGE.*

By E. C. L. MILLER, M. D., Richmond, Va.
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As you are all probably aware there has been discovered recently what seems to be a disease which attacks and destroys bacteria. The organisms are too small to be seen with the microscope and will pass through filters which hold back all bacteria. Bacteria attacked by this disease are not only killed but are completely disintegrated or dissolved; hence, the name, bacteriophage from the Greek phagein which means to eat or devour. The organisms seem to be strictly parasitic, growing only in young cultures of bacteria. If a young bouillon culture of bacteria about three or four hours old be inoculated with a suitable bacteriophage, the growth soon ceases and the cloudy bouillon becomes clear. Some of the clear material added to another young culture again causes the bacteria to dissolve and disappear. This sort of transplanting can be continued indefinitely. Already 1500 consecutive transplants have been made and the activity of the bacteriophage tends to increase rather than diminish in spite of the enormous dilution. If such a dissolved culture be greatly diluted and then added to an agar culture heavily inoculated on the surface with the bacteria, certain spots appear on which the bacteria are unable to grow, presumably, because at these points bacteriophages lodge and destroy the bacteria. If one attempts to make subcultures of the bacteria from one of these spots, no growth results; if from a remote area, normal growth results; and if from the edge of the spot, a ragged and irregular growth is produced indicating a mixture of bacteria and bacteriophage. Ordinarily, a bacteriophage attacks only one kind of bacteria though it is possible to train it over gradually to attack another species, especially a closely related species. Bacteriophages seem to be entirely indifferent to oxygen; they act just as well in the absence as in the presence of air.

Such, in a summary way, are the essential facts which have been discovered recently; now something about what this discovery may signify.

Where Is The End?

Bacteria have seemed to us right small creatures and if bacteria can have parasites and diseases it reminds us of de Morgan's lines:

"Large fleas have little fleas
Upon their backs to bite 'em;
These little fleas have lesser fleas
And so ad infiinitum."

Can this thing go on ad infinitum? Can these parasites of the bacteria in turn have lesser parasites on them? To help answer this question I wish to build a stair-case down into the world of the minute. (See table page 181).

The large protein molecules are probably about one micro-micron in size so that there is only one order between a protein molecule and the limit of the microscope in which this bateriophage can be placed (0.01) micron. Being only ten times the diameter of a protein molecule it could contain only 1,000 protein molecules or their equivalent. Can life with all of its complex activities be organized out of the equivalent of 1,000 molecules of hemoglobin? Possibly, but this certainly seems to be the minimum and it does not seem possible that this parasite of the bacteria can have a "lesser flea" to bite it.

It May Simplify the Study of Filtrable Viruses.

As you are well aware, it has been known for several years that many of our common and important diseases are caused by the filtrable viruses, that is by organisms too small to be seen with the microscope. There are about forty of these and among them are measles, scarlet fever, mumps, smallpox, typhus fever, trench fever, acute anterior poliomyelitis and rabies.

Very little progress has been made in the study of these organisms because they can be recognized only by allowing them to produce the disease in animals which is a very slow and unsatisfactory procedure. Here seems to be a similar organism which can be recognizel in a few hours by simply adding it to a culture of bacteria. This greatly simplifies the technique and may result in a rapid increase in our knowledge of these creatures.

It May Assist Us in Combating Pathogenic Bacteria.

If we have discovered a natural enemy of bacteria, one that can destroy them promptly

*Read before the Richmond Academy of Medicine and Surgery, February 13th, 1923.

1.0 meter—The world of man and higher animals.
0.1 meter—Song birds.
0.01 meter—Insects.
0.001 meter or 1.0 millimeter—Fleas.
0.1 millimeter—Limit of vision; chiggers.
0.01 millimeter—Body cells; the red blood cell=0.07.
0.001 millimeter or 1.0 micron—Bacteria.
0.1 micron—Limit of microscope; visible light=0.8—0.4.
0.01 micron—Colloid particles.
0.001 micron or 1.0 micromicron—Protein molecules.
0.1 micromicron—Atoms and most molecules; X-rays
0.01 micromicron—Gamma rays of radium.

and effectively in the body, it may, in time, prove a valuable ally in our fight against disease. It is easy to see that such co-operation between man and the bacteriophage would place the bacteria in a very difficult situation, between two fires, as it were, being obliged to fight, not only the defensive operations of the patient's system, but also this insidious enemy in their own midst. From our standpoint as physicians, it opens the possibility of being able to supply, to the patient, a quantity of these creatures all trained to destroy any particular bacterium that may be trying to injure the patient.

It May Control Epidemics.

Very little has been accomplished so far in the direct treatment of disease in man, by bacteriophages, but some progress has been made in studying epidemics among animals. The first bacteriophage found was recovered from the stool of a human patient convalescent from dysentery and it is generally true that the best place to find any particular bacteriophage is the stool of a patient recovering from that disease. A portion of the stool is suspended in salt solution, incubated over night, and filtered to remove all bacteria. The clear filtrate contains the bacteriophage. In an epidemic it frequently happens that no bacteriophage can be found in the early cases; later when the epidemic is on the wane bacteriophages can be found. A few naturally occurring epidemics among animals have been rather carefully studied and the role of the bacteriophage seems to be about as follows: In the healthy animal the bacteriophage seems to be living in a sort of quiescent equilibrium with the host. It may be confined to the intestinal tract or it may be scattered all through the body. When the new bacterium (the cause of the epidemic) invades the animal, the bacteriophages at once begin to adapt themselves to this new germ which has appeared in large numbers. They probably do not help that first case any, but before that case dies, they have acquired some adaptation to the new germ, they have increased in numbers and they are scattered, along with the epidemic bacteria, to other victims. Here, they again increase in numbers, they become better adapted to the new germ and they are more widely scattered to other members of the community. Thus it comes about that after a time many, or most of the individuals in the community are supplied with bacteriophages able to cope with the new germ and the epidemic dies out. In an epidemic of fowl-typhoid the stools of the sick and dying chickens were examined daily for bacteriophages. At first, none are found that would attack the organism causing the epidemic, but as soon as a virulent one was found the epidemic died out and the survivors then all showed virulent bacteriophages for that bacterium. A number of similar epidemics have been cut short by injecting all the chickens with a bacteriophage virulent for the causative organism.

Some work has been done in protecting the water buffalo from an epidemic disease called "barbone." This is caused by a germ belonging to the hemorrhagic-septicemia group. Several epidemics have been cut short by injecting a bacteriophage virulent for the barbone bacillus. It has also been shown that not only are the buffalo protected against the natural infection, but they have been able to resist an injection of an enormous dose of the bacteria—in fact they have withstood the injection of 1000 times the known fatal dose of the bacteria.

If this work is confirmed, it will provide us with an explanation of why an epidemic stops of its own accord. In the laboratory we know that pathogenic germs tend to increase in virulence when they are passed through a series of animals. From this, we would expect an epidemic to keep getting more and more virulent. As a fact, it does not do so, but quite to the contrary, soon gets less virulent and dies out of its own accord. Even the

world-wide influenza epidemic instead of completely exterminating the human race, as we might have expected it to do, quietly died out or died down to very modest proportions. In the past all we have been able to say in explanation has been that all the susceptible material had been used up; but why one person should be susceptible and another not, we could not say. Now it appears that one was susceptible because he had no bacteriophage to guard him and another was immune because he was equipped with a bacteriophage able to destroy the epidemic organism. If it is correct to call such resistance immunity and if we recall that the bacteriophages are scattered to the members of the community much as are the bacteria, then we can say that one "catches" his immunity in the same sense that he "catches" the disease. Whether he really has the disease or not depends on which he "catches" first.

Is It Alive or Not?

So far, I have assumed that this bacteriophage is an organized living creature of minute size because that seemed the simplest way to present it. However, it is no more than fair that I should inform you that the scientific world is by no means agreed that it is living. Many of those who have worked with it regard it as an enzyme. D' Herrell, who was the first to work with it, and who has done far more than anyone else, is fully convinced that it is living. Most of the American writers consider it an enzyme.

The two strongest points in favor of its being a living organism are its ability to increase indefinitely (10^{1500}) and its ability to adapt itself to changes in its environment (adaptation to a new bacterium). In favor of its being an enzyme are first, the fact that in its resistance to certain antiseptics it resembles an enzyme more than any known livng organism: second, the fact that similar lytic agents have been found or produced in cultures of bacteria under circumstances which seem to preclude previous contamination. This, of course, means spontaneous generation and it is easier to consider the spontaneous production of an enzyme than it is to consider the spontaneous generation of life; and third, its very small size seems to accord better with an enzyme molecule than with an organized living being. Every one admits that it is capable of perpetuating itself indefinitely and it is rather difficult to think of an enzyme doing this. We have usually considered self perpetuation as one of the prerogatives of life. However, it may be possible to have a self perpetuating enzyme.

It is rather interesting from a biological standpoint that the scientific world cannot determine whether the thing is living or not.

However, from a practical standpoint, it does not matter. All are agreed that it does the work: it destroys bacteria and it can be trained to destroy any particular kind we desire. Hence, whether alive or not, we should be able in time to utilize its power to destroy our constant enemies—the germs.

DENTAL RECLAMATION THROUGH MEDICAL REVOLUTION.*

By JOHN BELL WILLIAMS, Ph. G., D. D. S., Richmond, Va.
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"I have always thought it a greater happiness to discover a certain method of curing, even the slightest disease, than to accumulate the largest fortune."
—*Sydenham.*

With the trend toward organized group practice in our hospitals, the necessity for procuring the benefits of dentistry has been so amply displayed that it would appear presumptuous for him whose name is here subscribed to imagine himself capable of adding anything new to so exhausted a subject. This necessity in the treatment of disease is not at this time subject to controversy![1]

Step by step, dentistry and medicine have developed apart and have come back to the same road from which they both started amongst the early Egyptians when there were "those practitioners for the eyes, those for the head, some for the teeth, others for the belly and for occult maladies."[2]

According to tradition, dental surgery had its origin with Aesculapius, the god of medicine.[3] Hippocrates invented forceps and other dental instruments and established principles of interdental and inter-maxillary fixation for treating fractures of the maxilla and mandible which are used by modern practitioners. These principles of Hippocrates have stood the test of the ages, being proven anew with each recurring war. Although they strongly opposed bandaging, there are those who still cling to this antediluvian method of extra-oral fixation. One would almost suspect such persons of cher-

*Read before the Virginia State Dental Association in Richmond, October 19, 1922.

ishing a surreptitious belief in "touching" for "the King's Evil." Aristotle included the mouth in his studies. It may have been for purely personal reasons that the importance of this indispensable factor to politics was perceived, but it was for scientific reasons that his research was pursued. Cornelius Celsus emphasized the danger of the performance of mouth operations by unskilled men. While Galen contributed much to dental knowledge, his error in dubbing the pulp "nerve" remains as a monument to ancient science and as an antiquity to modern science.

Abulcasis, the medieval genius of Arabian surgery, attached great importance to scrupulous mouth hygiene and the early treatment of pyorrhea, while the English representative of this period, John Gaddesden, recommended the application of cow's dung to correct dental disorders.[4] However, we do not consider this seriously, regarding it rather as an Englishman's weakness for advertizing all products of John Bull than as a constructive step in dental history. The greatest surgeon of the middle ages, Guy de Chauliac, was the first to recognize dentistry as a specialty of medicine, but his treatment of the medical offspring thus sent into the world to gain his spurs, was rather of tolerance than serious consideration. Hence, dentistry may be considered the forerunner of the modern tendency toward specialization in medical branches and, up to recent years, has been treated by the parent profession with the condescension bestowed upon dissenters.

During the sixteenth century Fallopius gave to us an account of the dental follicle and Eustachius occupied himself in the study of the teeth writing the first book on their anattomy. Ambrose Paré, the father of modern surgery, acquired his first technical skill from the performance of mouth operations. The layman's attitude toward the profession during this period was anything but complimentary, for Shakespeare designated the dentist as a "tooth drawer" and described his profession as "a kind of unconscionable trade, because his trade was nothing else but to take away those things whereby every man gets his living." An interesting commentator relates that surgeons as "uneducated men and associated with barbers as well as apothecaries were prohibited from practicing physic." Even prior to this Chaucer had not spared the physician and his description is anything but flattering. "The English physician according to the poet was a man addicted to astrology and magic; glib of speech, with abundant assurance; in league with the apothecary to make the most out of his patients; indifferent to religious matters; avaricious to acquire and eager to keep." But these comments are mild, if we may be permitted to use Moliere's comedies as a mirror of the French mind, when he holds the whole medical faculty up to ridicule. While we do not deny his courage, we cannot admire his taste. Regardless of the condition of the medical art at that time, no man should attack a great profession which has always labored conscientiously in the service of humanity. The expression of such a sentiment as "a dead man is but a dead man, and of very little consequence; but professional etiquette neglected does great harm to the whole body of physicians," may have been immensely amusing to the vulgar populace, but immensely abusing to serious thinkers.

Dentistry of the twentieth century is the product of American dentists. The honor of our first dentist goes to New England, but as a consolation we may remind ourselves of the fact that the first American jury sat in Virginia and that this jury had the honor of convicting a "Doctor" (degree unknown) for horse stealing. In 1840 it became necessary for Drs. Hayden and Harris to establish the first dental school in the world when medical schools refused to include dentistry in their curriculum. For some time it was considered a great disadvantage to be thus severed. But "sweet are the uses of adversity" for the far reaching effects of this separation could not be foreseen by these pioneers. From that time the dental profession of America ceased to be held back by the parent profession and has developed as a separate entity far beyond the dentistry in those countries where the medical school has complete dominance. With the slowly revolving years we were coming back on a higher plane to an age of specialization as the age of our infancy among the early Egyptians. Dentistry had either to be rejected as a menace or accepted as a working part of the medical machine.

With the high development of the profession the desirability of hospital affiliation became apparent and dentists were appointed to hospital staffs. The harvest to be gleaned from such an association was soon indicated by the

innovation of ether anesthesia at the Massachusetts General Hospital by Morton in 1846. It is a great source of pride to note that it was in Richmond, Virginia, in 1881 that the American Medical Association met and passed a resolution creating a section on dental and oral surgery.[5] This movement was introduced by S. D. Gross, a luminary of American surgery, and warmly supported by the illustrious Davis.

At the first meeting of this section in 1882, emphasis was laid upon the necessity of establishing chairs on dental diseases in medical schools, to be filled by practicing dentists.[6] This resolution met the same fate as the one passed by the American Medical Association in 1887, providing for those holding the D. D. S. degree to become members.[7] We note in passing that "many are called but few are chosen."

As early as the year 1801, Benjamin Rush reported in his brilliant conclusions the miraculuous cure of "rheumatism," "dyspepsia" and other disorders, by the removal of diseased teeth, remarking "I have been made happy by discovering that I have only added to the observation of other physicians in pointing out a relation between the extraction of decayed and diseased teeth and cure of general diseases.[8] And so it appears that the genius of Dr. Rush lent itself as readily to establishing dental reclamation in medicine as his personality lent itself to establishing Thomas Sully's reputation as a painter.

Although physicians and dentists, have builded their history from the same traditions, laws, ethics and a mutual ambition for knowledge and skill to benefit mankind, it was not until the collective influence of the foregoing observations of Rush in 1801, Riggs revolutionary paper in 1875,[9] the report of a committee on rheumatic fever of the British Medical Association in 1889,[10] and William Hunter's indictment in 1910 was assimilated, that the importance of mouth pathology in the diagnosis and treatment of disease was accredited by the medical profession. As a result, and true to man's immemorial custom, there developed within the ranks of both professions a number of faddists, the culmination of whose genius seemed in a fair way to make the twentieth century go down in history as the Toothless Age. Arrayed against these were the ultra-conservatives whose motto seemed to be "no harm is done where no hurt is felt." But the vast majority of both professions held fast to the steadying influence of the old while reaching out for inspiration from the new.

From a clinical viewpoint the relationship between ill health and defective teeth was unquestionably demonstrated. But the belief that ill health was the result of the inefficiency of carious teeth in the process of mastication, causing indigestion, and that infectious food and the swallowing of pus was the sole factor, was not compatible with the fact that a healthy gastro-intestinal tract can usually tolerate poorly masticated food and as a rule destroy septic material when swallowed. The soil was tilled for the experiments of Rosenow, Billings and others to show the result of chronic mouth infections being distributed by metastasis to remote organs. Following thereupon, the medical parent began to turn a more tolerant eye upon the disenherited offspring. When a child begins to show intelligence a father straight-way claims it as his own. And so, as "the old order changeth," the birth-right was restored and a common interest recreated. Thus the day when dentistry was judged in terms of gold crowns and false teeth was relegated to the past, and rests in the archives with that era in medicine when calomel was king and blood-letting the anchor of hope.

At the present time hospital dental service has developed to such an amazing degree that some American hospitals require a dental staff of twenty-five persons. A report on dental needs and dental facilities prepared by the service bureau on dispensing and community relations of hospitals of the Americal Hospital Association shows that dental service is either definitely established or well under way in more than one-third of the two hundred and eighty-two general hospitals of the United States. On the basis of this survey and the studies of dental work made in connection with other surveys this report emphasizes:

1. "A dentist competent as a dental diagnostician should be recognized with adequate rank on the staff of the hospital, and should be given the necessary facilities such as access to the X-ray and to beds when necessary.

2. "The primary responsibility of the hospital in dental care is the dental diagnosis of patients whose mouth conditions are involved as a factor in the disease for which the hospital accepted these cases and for whom dental

treatment is necessary in order that the hospital medical and surgical work shall attain satisfactory results. In other words, a hospital cannot carry out adequate diagnosis and treatment without undertaking dental diagnosis and in some instances, dental treatment also.

3. "A routine dental examination of hospital cases should be included as a part of the physicial examination."[11]

In accordance with a resolution passed by the American Dental Association with regard to the development of dentistry in the hospitals of each state, the President of the Virginia State Dental Association, requested that a survey be made of the hospitals in Virginia. A letter was sent to sixty-two hospitals with the following questionnaire: "Is there a regularly appointed or permanently employed dentist on your staff? Does he examine the mouths of all patients? It so, to what extent? If not examined by a dentist, are the mouths of all patients? If so, to what excian? What is the extent of this examination?"

Of the hospitals addressed, forty-eight, or 77 per cent replied. This shows a most gratifying interest in dental service on the part of our hospitals. Fifteen hospitals, or 31.2 per cent, reported a dentist on their regular staff. Three hospitals, or 6.2 per cent, advised that they have under consideration the appointment of a staff dentist. A consultant dentist was acclaimed by seven hospitals, or 14.6 per cent. From the preceding conclusions we see that dental service is actually established or recognized as necessary in twenty-five hospitals or 52 per cent of those answering the questionnaire; this being forty per cent of those addressed in Virginia. Comparing our findings with the survey conducted among the larger general hospitals of the United States, it developed that the hospitals of Virginia, though comparatively small and frequently located in rural districts, are keeping pace with the progress of dental advancement. Encouraging as this may seem, the fact remains that in only nine hospitals, or 18.8 per cent, are the mouths of all patients examined by a dentist.

Further observation of the replies shows that in twenty-eight hospitals, or 60.4 per cent, an inspection only is made by a physician followed by a Roentgen ray examination if deemed necessary. But little mention is made in these reports of a clinical examination or interpretation of the X-ray examination by one trained in mouth diagnosis. From our view point a professional diagnosis cannot be satisfactorily determined except by one so trained, but, of course, every question has two sides. It makes some little difference to the fly, however, which side of the "tanglefoot" he lights on.

The most surprising fact disclosed in this survey is that in this day of highly devoloped medical science one-fifth of the hospitals recorded apparently do not consider the mouth as a factor in disease since they report no examination at all. This deficiency has been explained by some as due to "the war," but they neglected to make clear whether they referred to the Spanish-American or the Civil War.

The ideal of our hospitals is no longer merely to put the patient back on his feet; to restore the patient to his normal self is the goal. To realize this ideal, the mouth examination is one of the elements from which the complete diagnosis is made.

"Men have found that mastery comes through limitation of field and concentration of interest and effort; coincident, however, with this increasing division of labor, provision must be made for the synthesis of results of special workers into harmonious wholes. For this integrative function, men of wide training and sympathies, with comprehensive grasp, possessing the so-called encyclopedic type of mind, will be needed more than ever before, to sift the essentials from the non-essentials, to arrange, classify and reduce to manageable volume the total results of special workers."[12] At their disposal must be "those practitioners for the eyes, those for the head, some for the teeth, others for the belly and for occult maladies."

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CORRELATION OF DENTISTRY AND THE PRACTICE OF MEDICINE.*

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The opportunity to appear before an association of the dignity and importance of the Virginia State Dental Association is an honor to be coveted, and I wish to convey to you this acknowledgment of my appreciation of your invitation to read before you a paper on a subject of interest to the allied professions of Medicine and Dentistry.

It would be presumptuous for me, granting that I had the technical knowledge, to attempt to enlighten you on the fundamentals of your own profession; nor can I attempt, as a representative of the medical profession, to bring to you the consensus of opinion on the Correlation of Medical and Dental Practice. While this interdependence has been recognized, in the abstract, for some time, an appreciation of this relationship is now of increasing importance if we are to reach an approximate solution of diagnostic and therapeutic problems that concern both professions; if we are to be reciprocally helpful in developing a broader professional vision, and in acquiring a more comprehensive understanding of the present trend in medical and dental education and practice; and, finally, if we are to realize that the individual and collective efforts of the teacher, the research worker, and the practitioners of medicine and dentistry are proceeding, not in diverging lines, nor yet in parallel lines, but in lines that converge to a common point and that represent the consummated ideal of both professions, preventive medicine and dentistry.

We can appreciably add to the impetus of this movement by a more wide-spread acceptance of the fact that the knowledge of the one profession is complementary to that of the other and by the utilization of this knowledge in a more detailed and frequent contact of the two professions at the bedside, in the clinic and in open discussions.

I will present some evidence to illustrate the present trend so far as it affects the undergraduate of both professions and in what manner specialization in effort has been the inspiration to progress in both professions. By specialization, I refer to a definite, intelligent, and sustained endeavor by one who, fundamentally grounded in the principles of his profession, preferably with a background of a well ordered and carefully analyzed general experience, has the ability, the aptitude and the enthusiasm to concentrate all of his powers, analytical and constructive, for the more complete understanding of a more or less circumscribed field of medicine or surgery.

Specialization in medicine has existed for a longer period of time than has specialization in dentistry, and this specialization has played a most important role in the extension of medical knowledge. By the operation of individual thought in the laboratory and in the clinic, by scattered observers over long periods of time, has resulted in large part the generalization and collective medical knowledge of today. From the same source we may expect the enlarged knowledge of tomorrow.

Dentistry is following the same cycle, and, like medicine, producing its practitioners, its research workers and its teachers. The last two classes, the research worker and the teacher, definitely link our two professions. The research workers in the two professions are actuated by the same desire, they have the same fundamental training and they are solving very similar problems, for they are primarily concerned in a study of the causation and prevention of disease. The teachers are primarily concerned in the dissemination of the methods adopted by the research workers and the results achieved by the practitioner in the alleviation and cure of disease.

If the practitioner, medical or dental, is to keep in touch with the advanced thought of

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his profession, if he is to give to his clientele the benefit of improved diagnostic methods and refined therapeutic procedures, he must establish some contact with the source from which this information continually flows.

My own experience in medical teaching and practice (for 22 years) has naturally led to a crystallization of opinion along this line. Not the least important of these conclusions has been a recognition,

First, of the deadening influence that follows a voluntary or involuntary professional isolation in the practice of medicine, whether in the heart of a congested city, or in the sparsely settled country districts;

Second, a corollary of the preceding, the stimulating effect of daily contact with fellow workers, and young enthusiasts, and the great benefit to be derived from a critical review of the weekly, monthly, or quarterly, summaries of the achievements of fellow workers, or an account of the origination of researches in new fields;

Third, is the necessity for a co-ordination of thought and opinion in the allied realms of general medicine and its specialties: general surgery and its specialties: dentistry and its specialties, in the light of a more illuminating physiology, pathology, bio-chemistry and pharmacology.

If we follow the present trend of the educational movement in Medicine and Dentistry, we must be impressed by the similarity of purpose and identity of expression by the leaders in these great spheres.

For example, Eycleshymer, University of Illinois, in an address on "Liberalization in Medical Education" has this to say: "In human progress there are two fundamental processes which sometimes proceed equally, but usually one or the other is dominant. . . . . These two processes are extension and consolidation. In the past medicine was largely restricted to the diseases of mankind. At present she recognizes the ultimate relationship of the diseases of plants and animals to those of mankind. In the near future she must take into consideration the diseases of metals: ultimately her domain will extend over both the organic and the inorganic world. . . . . In the growth of knowledge in all of its special fields and great provinces, and, a whole, the same two processes stand forth, specialization and generalization. The vitalizing factors in these are individual thought and collective thought. Greater men in medicine must come through great liberty in medical education. The practitioner of the future, either general or special, not only must measure up in self reliance, responsibility and judgment to the practitioner of the past, but also must be better trained and more thoroughly imbued with the investigative spirit. Acuteness in observation, precision in experimentation, and caution and judgment in deduction, are the essentals for the interpretation of disease."

Now as a parallel idea the following excerpt is taken from an editorial in one of the dental journals. (*The Dental Cosmos*, Aug., 1922).

"If one were seek for the principal underlying cause of the revolutionary change that has led up to present day dental science and art. . . . . the germ theory of disease should rank first in importance. From the light thrown upon the etiology of dental caries by Miller to the present day knowledge of the bacteriopathology of the oral cavity and the causal relation of mouth infection to systemic disease, the science and art of dentistry have experienced a new birth. . . . . the objectives of dental practice are primarily vital rather than mechanical. The basis of dentistry is now biologic and its mechanical procedures are not ends in themselves. . . . . The training of the latter day dental student must include a practical acquaintance with the broad underlying generalizations of science and the methods of reasoning by which these fundamentals have been evolved. In dental teaching there is needed a curriculum that will be educative as a whole, not merely informative."

If these educational principles are desirable for the undergraduate body, their continued application is essential for us, who have left the doors of our Alma Mater, but who are still students attempting to acquire a much desired post-graduate culture while in the service of a jealous mistress.

Both professions in this State have worthy practitioners and eminent teachers: both professions for their highest development need to produce more research workers. With vocational teachers in our state medical and dental colleges and teaching hospitals, with unlimited laboratory facilities and abundant clinical material, can we not feel reasonably assured that the day is not far distant when our undergraduate and graduate student body

will feel the call to this higher professionalism and, by their efforts, place Virginia schools and the Virginia professions in the forefront of investigative work?

The progress of dental science has been most closely watched and evaluated by your own leaders. The recognition of this progress by the medical profession was fairly sudden and coincident with the demonstration of the importance of oral sepsis.

I do not for a moment minimize the part played by our medical leaders in demonstrating the existence of oral sepsis and its relation to systemic conditions, but I would point out that the reaction of the medical mind, when it had once accepted as a possibility the importance of oral sepsis, varied somewhat, according to its professional age and to the criteria the individual had assumed as necessary to prove the efficacy of any therapeutic procedure. The practical application of this principle of oral sepsis was possible only with the aid of the dental practitioner. Frequently the combination of the two, enthusiastic disciples of new thought, let credulity run away from judgment. In this connection we remember the acceptance by many of the profession of the role allotted the amoeba in the production of pyorrhoea and the brief reign of glory enjoyed by emetine in the treatment of the condition. The sober consideration that followed the shattering of many ill-considered but optimistic prognoses and the realization that multiple foci of infection might exist tended to stabilize the medical and dental enthusiast on this engrossing subject.

The graduate of recent years, well trained in laboratory methods, in the theory of infection and immunity, is better aware of the possibility of multiple foci, other than the mouth, and also of the fact, that while foci of infection may originate and tend to perpetuate systemic disorders, yet, in many cases, secondary intoxication, metabolic rather than infectious, may assume the dominating role and perpetuate a vicious circle. It is in this type of case, for instance hypertrophic arthritis, that great disappointment has followed a failure to obtain relief after the surgical removal of one or more septic foci.

I doubt if there is any one subject on which there is such unanimity of opinion in the two professions, or any subject which has been more thoroughly discussed in all its ramifications than the subject of oral sepsis. Aside from its manifestations as a frank sepsis, we have had our attention directed to the role it may play in the essential anemias, achylia gastrica, certain forms of insanity, various arthritides, vascular and renal degenerations, and endocrine dyscrasias. The importance of oral prophylaxis and hygiene is so well established that it does not require further mention in this particular paper.

At this time, attention may be focussed not on the teeth as such, but on the mouth and all of its structures, mucous membrane, submucosa, the osseous tissue of the maxillae, the mandible, the teeth and the alveolar structure, the blood and lymph supply, the innervation; the functional ability of the mouth structures and jaw musculature, together with a consideration of developmental anomalies, acquired defects, the effect of traumata and bad habits and the modification in function that accompanies retrogressive tissue changes in the body, however induced, and systemic states as reflected in the mouth.

This enumeration opens a field of far greater dimensions than that of oral sepsis. For the whole, obviously, is greater than any of its parts, no matter how important a fraction may be as compared to the whole. Oral sepsis is concerned with the principles of infection and immunity, with predisposing and active agents, with local and general tissue resistance. This larger field, in addition, is concerned with the findings of embryology, and the application of the principles and teachings of physiology and biochemistry. It emphasizes the interrelation of organ function to organ function as part of a general whole. It calls for as liberal a fundamental training on the part of the dentist as is now given to the medical man.

If it is essential that a physician should have some knowledge of the mouth changes that accompany Addison's disease, primary anemias, arsenic and lead poisoning, the mucous membrane changes of pellagra, purpura, scurvy, the exanthemata, syphilis, parasitic infections and various dermatoses, is it not also necessary that the dentist have an understanding knowledge of these general conditions that give such mouth manifestations?

It can be demonstrated that, even in the absence of infection, mouth conditions can produce systemic states to the point of incapa-

city. If the early recognition of these clinical possibilties gives the opportunity for a more reasonable prophylaxis, and a less extensive pathology in consequence, should not both professions be on the alert for the early manifestations of such states? Let us illustrate this point by rickets, a deficiency disease in which faulty bone formation may occur with a resulting faulty shape of weight-bearing areas and an insufficient support of structures designed to bear appreciable stresses from the application of varying muscular forces. I venture to say that the physician would be more impressed with the resulting visible bony changes in the extremities and thorax than he would be in the possible bony changes in the head and face with their resulting effect on dentition and mastication.

Cryer in various reviews has presented a study of the developmental changes in the bones of the face and the embryonic relationship of the mucous lining of the mouth, nasal cavities and all the internal surfaces of the face, the teeth and the alveolar process. He points out that at the age of five or six years, forty-eight teeth are in various stages of transition: that with normal development the jaws are in typical relationship the one with the other, and the teeth erupt with typical alignment and occlusion and with typical arches.

With pathologic conditions subsequent to the eruption of the deciduous teeth, structural alterations and misplacement of the permanent teeth may occur with modification in the shape of the jaw, face, maxillary sinuses, and even in the nose and its accessory sinuses. Viewed in this light, rickets has a new significance and abnormal mouth mechanics loom as a potential etiologic factor in diseases of the gastro-intestinal and respiratory tracts.

Disharmony of structure must be associated with disharmony of function. As the salivary and mucous glands arise from the same embryonic tissue as the teeth and the alveolar process, perverted development of the one should leave some impress on the development and functional ability of the other. If then insalivation and mastication are important steps in the digestive cycle, any perversion of form or function may initiate a change in the whole digestive cycle.

Green recognizes this when he states that "Loss of the means of mastication may lead ultimately to partial or complete loss of function of the glands which furnish certain important digestive hormones." (Medical Diagnosis).

Lorand, in Old Age Deferred, speaks of its onset, even before thirty years of age as being "accompanied by loss of the teeth, the gums also are retracted from the teeth, which consequently appear greatly lengthened: later on the teeth become loosened and fall out. This then causes the jaw bone to atrophy, the face becomes sunken and the individual appears many years old. There is a tendency to constipation, nutrition is below normal," etc.

For the maintenance of any function, constant exercise of such a function is essential, and the state of the general vitality of the patient conditions the functional activity of each organ. Glands must receive their normal stimuli: the digestive glands have their chemical hormones, secretory impulses along the nerve paths as well as the physical presence of the food. Inhibition of function, even in the normal organ, may be variously induced.

The function of motility is often of greater importance than the function of secretion. Diminished motility may result in stasis: increased motility in hyperperistalsis and even spastic obstruction. With the former, abnormal fermentation or putrefactive changes may be induced, while in the latter, diarrhoea may result: in the former toxemia and malnutrition, while in the latter is the tendency to diarrhoea and asthenia. The character of the food ingested is determined to a large extent by mouth mechanics: the number of teeth, their occlusion, the sensitiveness of the gums and the peridental tissues.

Cannon, in his "Mechanical Factors of Digestion," gives a summary of what occurs in normal mastication; postulating a normally developed bone and muscular apparatus his reference to the secondary events induced by the initiatory act are of great interest, for from it we can readily deduce that just in proportion as mastication is interfered with, whether by structural alteration or defects, or by painful phenomena associated with the act of mastication or deglutition, the whole cycle of digestion and assimilation may be unfavorably influenced.

"The freedom of movement of the lower jaw permits a wide variety of relations between the upper and lower row of teeth: they can be brought together, separated or pressed

with a sliding motion one row upon the other, either forward and backward or from side to side. The up and down motion is essential to the use of the biting front teeth: the side to side motion is more useful in the later process of chewing: the tongue and cheeks act like the hopper of a mill, and force the food between the grinding facets until it is broken up or torn into fragments of proper size for swallowing.

"The duration of mastication varies with appetite, age, the demands of business, the quantity of food in the mouth, and especially with the nature of the food, whether fluid or gummy, moist or dry, crisp or tough. The amount of mastication given any food is related to the readiness with which a mass is comminuted, insalivated and gathered into a bolus, and is not related to the degree of salivary digestion.

"The effect of the mechanical treatment in the mouth is the production of a semi-fluid mush in which there are likely to be particles of varying size, less than 2 m.m. in diameter. Such comminution must result in an enormous increase in the surface exposed to the action of the digestive enzymes and thereby promote the rapidity of their action. The secretion of saliva, which softens the hard particles in the food and with its ptyalin starts the digestion of starches, is also promoted by the movements of mastication. The pressure exerted in the process of mastication may be surprisingly great. The pressure which the molars are capable of exerting, for example, as determined by a spring dynamometer may be as high as 270 lbs. With a direct thrust the crushing point of cooked meats has been found to vary between fifteen and eighty lbs., of candies between thirty and 110 lbs. and of various kinds of nuts between fifty-five and 170 pounds.

"The voluntary act of chewing has been found to have much significance for the proper initiation of gastric digestion. During mastication substances of pleasant taste are brought in contact with the gustatory organs of the tongue and cheeks and odors released from the separated food rise to the olfactory region of the nose and, through the pleasurable sensations aroused by this stimulation, the gastric juice is reflexly started flowing in preparation for gastric digestion. As has been proved by experiments of Pawlow and Elkins, this initial 'psychic juice' may be a prime condition for the co-ordination of gastric and intestinal digestive processes.

"Still another remote effect which may result from the chewing of agreeable food is the development in the stomach of a condition of tonic contraction, a state of sustained shortening of the circular muscles, which nicely adapts the capacity of the organ to the contents, whatever the amount swallowed. The peristalsis of the stomach, which churns the food with the gastric juice and pushes the chyme onward into the duodenum, is dependent on the tension developed in the muscular wall as a result of its tonic state. Although these secretory and motor activities of the stomach are not, as we are aware, directly subject to voluntary control, they are capable of being profundly influenced, favorably or unfavorably, by the character of the experiences, agreeable or disagreeable, that attend the process of mastication."

Is any further evidence needed to indicate the role that mouth mechanics play in the digestive act? Deduction readily indicates the functional changes that may occur and it is a well known fact that functional disorders, perpetuated, finally resolve into true pathologic states. A similar relationship applies to the respiratory tract.

Mouth conditions, aside from oral sepsis, that induce respiratory affections, are operative chiefly in that they produce changes that mechanically impair proper ventilation of the upper air passages, induce mucous membrane changes, lower tissue resistance, conduce to infection, and result in marked irritation of the respiratory bronchial tract with subsequent pathology.

The normal protective mechanism of the lungs is so efficacious that, according to F. Muller, the contents of the alveoli and of the bronchi, even as far as the trachea, are sterile, under physiologic conditions.

That part of the protective mechanism we will consider lies in the area and arrangement of the mucous membrane of the nose. Here we find an enormous area of mucous surface in a relatively small space, due largely to the shape and formation of the turbinate bones, producing approximately one and one-half pints of secretion daily. In normal nasal breathing the air is warmed, filtered and saturated with moisture in its passage through

the nose before it enters the lungs: foreign bodies of small size, dust, soot and bacteria are entangled in the surface mucous: the current of air passing backward is deflected at an angle by the pharyngeal wall with further opportunity for the deposition of foreign particles, and it then enters the lower respiratory tract where the second part of the defensive mechanism becomes operative. Conditions, then, that lead to mouth breathing negative the first part of the protective mechanism of the lungs and thus may induce disease.

In this connection, Cryer states that abnormal deposits of lime salts may prevent the teeth from erupting into their normal positions, fixing the cancellated tissue of the alveolar arch, forcing the tongue back into the pharynx, carrying the soft palate upward and plugging the posterior nares, producing mouth breathing and blocking nasal drainage.

I have been impressed with the number of cases, even in early adult life, that present anatomic nasal changes, not the result of traumatism, and not, necessarily, the result of infection, even though accompanied by infection. I refer to distorted nasal septi, with resulting mucous membrane changes and the conditions that produce mouth breathing.

Dewey states that "the distance between the floor of the nose and the roof of the nose is dependent upon the development of the lateral wall of the nose, the principal part of which is the superior maxillary bone. If any condition arises that interferes with the growth of the superior maxillae, it necessarily will cause a shortening between the floor of the nose and the roof of the nose and the nasal septum, continuing to grow downward, as it meets with resistance from the floor of the nose, will become deflected."

This statment tends to answer the question as to whether the nasal condition is a primary one, or secondary to abnormal mouth development in a certain number of cases, and also to answer the question "Should these patients have been referred in early life to a rhinologist, a pediadontist or an orthodontist?"

The rhinologist would probably have advised a period of watchful waiting, certainly until fifteen years of age, and then, if necessary have adopted an operative rather than a prophylactic procedure. In this connection I can heartily endorse the opinion expressed by Dr. Liles before this Association at its last meeting, "That it is a duty to be alert to diagnose and treat causes rather than symptoms and that preventive dentistry must start with the child even before the teeth are erupted."

I believe dental consultation should be a routine procedure in early life, even in children supposedly normal.

The relationship of mouth conditions to manifestations on the part of the nervous system is not so apparent, but, when we consider the innervation of the teeth and associated parts by the sensory branches of the fifth cranial nerve and note the relationship of the nuclei of the fifth nerve with those of the sixth to the twelth cranial inclusive, as well as the ganglionic communications of the fifth nerve, we find an explanation for many of the reflex phenomena originating along some of these branches.

Conditions producing irritation along one small portion of its many branches and subdivisions give varying manifestations in the central nervous system or the organs of special sense—optic, olfactory, auditory—as well as in the gastro-intestinal and respiratory tracts. Among the causes producing such manifestations may be listed, mechanical compression of the nutrient foramina, however induced, inpinging on nerve or vessels, shocks from blows upon the mandible or from an abnormal degree of concussion in mastication, chemical irritants, metabolic or bacterial toxins, unerupted or impacted teeth.

The resulting symptoms will vary with the intensity of the exciting cause and the duration of its action and will include vaso-motor, secretory and trophic, as well as painful phenomena, from the mild neuralgias to the severe neuritides.

While the areas of pain reference to the head and face have been worked out for the various teeth such as fronto-nasal, maxillary, mandibular, temporal, mental, naso-labial, and superior laryngeal, the same areas may be involved in diseases of the eye, the nose and its accessory sinuses, and certain thoracic and abdominal viscera supplied by the vagus,—especially the lungs and the stomach. A discriminating judgment and a most careful analysis of the evidence would be called for in establishing the true etiology of such manifestations.

An illustration of a trophic manifestation

from dental irritation is of interest. Le Clercq, in discussing Chronic Gingival Irritation in the etiology of Alopecia Areata, shows that in 105 of his cases it was the sole determining factor; in twenty-five per cent. it was the preponderating factor: and in sixty-five per cent. it was a more or less important factor. The alopecia was limited to the side of the dental lesion, it was characterized by a limited number of areas, generally but one, with two areas as a maximum where only one tooth was involved: it was peculiarly benign and yielded readily upon cessation of the irritation.

The evidence I have presented to stress the analogy in the fundamental training of the medical and dental student: and the points of contact chosen to illustrate the correlation of medical and dental practice could be indefinitely extended.

My own attitude is one of profound respect for the achievements of dentistry and a realization of the fact that dental diagnosis requires for its fullest development, and has produced, men as well trained for the purpose as can be found in any medical or surgical specialty. That in its therapeutic procedures, prophylactic or curative, it calls for the mechanical skill of the artisan and the imagination and perspective of the artist for accomplishment of results necessary, not only for the comfort and appearance of the patient, but for the preservation of most important body functions. And, that until such qualified dental representatives are added to the staffs of all general hospitals, or included in any group of men who offer a complete diagnostic clinic, a most essential factor is lacking in what otherwise might be a complete organization. The practical operation of such dental contact can probably be best worked out by hospital and out-patient organizations. The establishment of such a dental department and the appointment of a chief of such service, with full responsibility for the development of the department, has at once a tremendous educational value on the entire hospital staff.

In a teaching hospital, the qualifications for such a chief should closely parallel those required of the head of a surgical division, including aptitude as a teacher, interest in pedagogic affairs and research, large clinical experience, and general proficiency as a practical dentist. Such a chief should have the authority to nominate to the governing board all associates and subordinates and should be held personally responsible for the character of their work.

In our own hospital, a private institution, a routine inspection of the mouths of all hospital cases is made by Dr. Guy Harrison, head of the Department of Oral Surgery. He indicates on a special form to be attached to each chart whether or not a complete mouth examination is indicated. The signature of the attending physician on this attached report authorizes or declines such complete examination. This procedure was adopted because many of our cases are from the city in which the institution is located, have their own dental affiliations, and might prefer to have such examination completed by men of their own choice, and at some future time.

In a general hospital, certainly on its charity wards, such a degree of ethical consideration would not as a rule be necessary for obvious reasons.

When the volume of the hospital clinic justifies the service, appointment of dental internes must be considered.

I might say, that, so far as the teaching hospitals of the City of Richmond are concerned, the Memorial and St. Philip's, we are now making a critical survey of each hospital teaching department, its organization, its teaching methods, and its functional efficiency as it pertains to the department as such and also as an integral part of the Medical College. As chairman of its Medical Staff, I feel that a sympathetic and understanding co-operation of this staff with the representatives of the dental faculty will, in the near future, result in a most satisfactory and constructive development along this line, and include in addition an opportunity for the training of the entire nursing corps in essential mouth prophylaxis.

The value of our own staff meetings has been materially enhanced by the presence of our dental confreres. Their discussion of our work, and our discussion of theirs, the exhibition and reviews of cases, has resulted in a better balanced viewpoint that would otherwise be possible, and has been of enormous informative value.

Until all patients, charity or pay, can have the benefit of such talent, and the staffs of all general hospitals are strengthened by the addition of such men, we as a profession have

failed in an obligation to the patient, the institution and ourselves.

Stuart Circle Hospital.

ETHMOIDITIS: DIAGNOSIS AND TREATMENT.*

By ELBYRNE G. GILL, M. D., Roanoke, Virginia.

Medicine arose out of the primal sympathy of man with man; out of the desire to help those in sorrow, need and sickness. This knowledge must have been brought very strongly to the attention of the Program Committee when they selected this subject for the symposium, for one has to be in practice only a short time to realize that the problem of "Ethmoiditis" is one of the most perplexing and oft times disappointing in the whole category of our specialty.

Before entering into a discussion of the subject, the anatomy of the ethmoidal labyrinth will be briefly reviewed. These cells are present at birth, being hollowed out in the foetus at the third embryonal month and develop simultaneously with the frontal sinus. The latter is but an offshoot from the ethmoid, which forces its way into the diploe of the nasal portion of the frontal bone. Curran has proven that all of the cells are present at birth as well as those which afterward go to form the sphenoid.

The ethmoid labyrinth embraces all that portion lying between the two lateral plates of the orbit. It is composed of two capsules, with a partition between; normally, the cells of the ethmoid labyrinth are contained within the limits of the ethmoidal capsule but, under certain circumstances, they may extend far beyond these boundaries into the frontal, maxillary and sphenoid bones.

We are now brought face to face with the problem of diagnosis. When a patient presents himself (A) for examination with the history of sneezing, loss of sense of smell, dull headache, mouth breathing and bronchial asthma, and a rhinoscopic examination reveals the presence of a nares filled with polyps, the diagnosis is apparent even to the most superficial observer. The treatment is obvious. This type of case is frequently encountered and the results from surgical treatment are universally good when a complete operation has been performed. By a complete operation is meant a thorough removal of all ethmoidal cells (anterior and posterior).

Now another patient (B) presents himself for examination, giving the history of having a post-nasal discharge particularly annoying in the morning on account of the glue-like secretions which accumulates in the throat and naso-pharynx. Are we dealing with a discharging ethmoid, sphenoid, or maxillary sinus? How can we convince ourselves the ethmoid is the offending sinus? Needle puncture will reveal the contents of the antrum. What a joy and relief it would be to all rhinologists if the sphenoid could be eliminated as readily. We are told that a cotton-tipped applicator introduced into the opening of the sphenoid will disclose the nature of its contained secretions. This statement is easily made but difficult to substantiate.

For making a differential diagnosis, Skillern suggested the following technique: "Introduce a small quantity of powdered methylene blue on a cotton pledget into the sphenoid after thorough cleansing and drying. Into the maxillary sinus, it can be insufflated through a Lichtwitz needle. The patient is instructed not to blow the nose or clear the throat as far as possible until next morning. Then use a large cloth or towel. Comparison of the masses of blown or hawked out secretions will at once show the amount that is tinged with blue and that which is clear of coloring matter, thus giving one reliable data from which to draw a conclusion. If it is shown that the mucosa of the sphenoid or maxillary is secreting a considerable amount, a differential diagnosis between these two can be made by alternating the application of the methylene blue between them." This suggestion is worthy of careful and thorough trial as the sphenoid is a stumbling block to all of us when called upon to say whether it is diseased or not. Even when we have the assistance of a skilled roentgenologist.

After weeks and sometimes months of careful and painstaking treatment of these cases (which usually are patients of prominence), we find that the annoying post-nasal discharge continues. We have satisfied ourselves that the sphenoid, maxillary and frontal are not diseased. What is our next procedure?

We are now presuming that all palliative measures have been exhausted. Should we advise operation on the sinus? This question

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can best be answered by individualizing every case. What is best for one patient will not always apply to another. Age, temperament, vocation, all have to be considered. In case an operation is performed, conservation should be the "guiding star." It is better to do too little at first and if necessary do a secondary operation, for if too much is done at first the opportunity may not be given for the second operation.

In the writer's opinion, the operative procedure required for this type of case is a correction of any existing septal deformity and a middle turbinectomy. This will provide ventilation and drainage. We should begin anew our palliative treatments; namely, daily irrigations with saline solutions and suction. If this procedure does not effect a cure after a reasonable time, it is doubtful whether furthur operative procedure would be justifiable. Vaccine therapy in my hands has been a disappointment and its use has been discontinued.

Having briefly discussed hypothetical cases A and B, let us turn our attention to hypothetical case C, who presents himself for an examination of nose and accessory sinuses at the instance of an ophthalmologist. The patient hasn't any subjective symptoms referable to the nasal sinuses such as existed in cases A and B, but has has optic neuritis or some other kindred lesion and the nasal sinuses are suspected as being the etiological factor. The rhinologist is asked to state if the sinuses are the sources of the infection. Rhinoscopic examination reveals a deviated septum which wedges the middle turbinate firmly between the ethmoidal labyrinth and sphenoid. Examination otherwise negative. Shall we report negative nasal findings because pus was not evident and the X-rays negative?

Stark answers this as follows: "From a nasal standpoint we must not expect to find the common symptoms of sinus infection, pus polyps, history of nasal discharge, etc., as we are dealing with a closed sinus; otherwise, we should not have pressure. The deflected septum and middle turbinate tightly pressed against the lateral wall should always be suspected." How shall we now proceed? Advise immediate operation or a more careful search for other foci of infection? Beck says: "I often wonder if in some of these cases it would not be wiser to operate immediately and then take a Wassermann or other diagnostic measures, because while waiting to make a diagnosis by exclusion the nerve may be irreparably damaged by the swelling. It will be admitted that a latent lues may exist in a non-luetic sinus disease, and many a so-called toxic amblyopia has been treated by withholding tobacco and alcohol and has gone blind while the sinus disease was not taken into consideration, because there was no pus in the nose or the X-ray was negative."

The appropriate treatment would be as in the former case, a submucous resection and a removal of the middle turbinate, as ventilation and aeration will have been established. This statement is well illustrated by the report of the following case, taken from my records:

Case Report: R. G. C., age 35, consulted me November 21, 1920. Occupation, farmer. Gave the following history: Twelve years ago right eye became blind (has been this way ever since). Onset sudden, without any apparent cause. Three years ago left eye became partially blind. Had to give up his work as clerk. Condition remained this way for about six months. Under treatment vision improved to such an extent that he resumed his duties as a clerk. For past three months vision in left eye has been failing rapidly and now only sees fingers at close range. Results of my examination are as follows:

Vision O. U.—Form at close range.

Vision O. D.—Total blindness.

Vision O. S.—Form.

External Examination—O. S. Pupils react to light and accommodation. Cornea, heavy deposits on Descemets' membrane. Tension normal.

Fundus Examination—O. D. Rupture of choroid and retinae in macula region. O. S. Numerous and heavy vitreous opacities. Impossible to see nerve head.

Sinuses—All clear to transillumination.

Nose—Septum deviated to left side coming in contact with middle turbinate. No pus or secretion of any kind present.

Throat—Tonsils cleanly removed.

Ears—O. K. Stereoscopic X-ray plates reveal cells of ethmoid and sphenoid perfectly clear.

This patient has been through the hands of three competent ophthalmologists who had made careful and painstaking search for some

foci of infection. Every test, including Wassermann, was negative. Tonsils had been removed, along with several teeth, with the hope of finding the source of infection, but the vision continued to fail. In spite of the negative X-ray findings of the sinuses and the absence of pus in the nose, I advised opening the ethmoidal labyrinth and the patient like "The drowning man" readily consented. On November 22, 1920, I performed a submucous resection. Middle turbinectomy and opened the ethmoidal labyrinth. Mucoid material was present but no pus. No attempt was made to curette all of the ethmoid cells as ventilation drainage had been established. Also we felt that it was almost a physical impossibility to remove all of the cells as we may cause a spread of the infection or exaggerate it by leaving a mass of macerated tissue. The progressive improvement of the patient's vision reveals the wisdom of the position taken. The patient left the hospital November 25, 1920, and returned to his home in the country. Only medication was iodid pat and nasal spray. On January 15, 1921, (two months after operation), patient's vision was greatly improved. This improvement continued until he returned to my office, May 20, 1921. Vision O. D. Nil. O. S. 20/20-2. Fundus O. D. Same. O. S. Vitreous clear. No opacities.

I mentioned this case for two reasons: first, to show the seriousness of a latent infection of the ethmoidal sinuses, and secondly, what may be accomplished by simply establishing ventilation drainage through removal of the middle turbinate and the correction of the septal deformity.

This patient was seen again September 15, 1922; condition was the same, vision O. S. 20/20-2.

We have touched upon the three types of chronic ethmoiditis which we encounter in our daily routine. No effort has been made to present any one in all of its phases as space and time will not permit, and furthermore it is not so much my desire to present my views as it is to elicit a full discussion from the members of the Society.

There is another type, Acute Suppurative Ethmoiditis, which has not been mentioned. When a patient presents himself for examination giving the history of severe sub-frontal headache, worse in the mornings, nasal discharge, following "cold," one immediately thinks of sinus involvement. Again we are called upon to say whether we are dealing with a maxillary, frontal or ethmoid. Needle puncture will eliminate or condemn the antrum. A differentiation between frontal sinus empyema and suppuration of the anterior ethmoidal cells is more or less of a rhinological nicety. It is now generally conceded that when frontal sinus cells are involved the ethmoid cells are similarly affected. Since the therapy in both instances is practically the same (daily saline irrigations and suction), further consideration will be useless. If these cases are treated at the onset, fully ninety per cent. will clear up under the above mentioned treatment. In the few cases that do not respond to this mode of therapy, operative interference will be required. All that is necessary in most cases is a fracture of the middle turbinate which provides drainage with the aid of suction.

In the presence of acute suppuration, one should do as little surgical work as possible. A sub-mucuous resection, turbinectomy and ethmoidal exenteration is only indicated when there is an invasion of the orbital tissue by the infectious process or symptoms of impending intracranial involvement.

From my brief remarks on this all important subject, one may infer that I shun too readily major surgery on the ethmoid. It is not the major surgery I shun but the major failures it entails. No less an authority than Skillern says, "Operative procedures upon the ethmoid, unless slowly, carefully and systematically carried out, are most apt to spell disappointment, and radical operations upon this structure do not by any means end in radical cures."

Conclusions.

1. Complete exenteration of ethmoidal cells in cases B and C should be the court of last resort.

2. If we will spend as much time and patience treating these cases before operation as we do following the operation, fewer would be necessary, as there is no part of the human anatomy which possesses more recuperative powers than does the nose and its accessory sinuses.

3. Before any operation is done, one should always study carefully stereoscopic X-ray plates of the affected parts. Bacteriological examination of the secretions or pus should be made.

4. If by the presentation of this subject we

will have learned to respect the "virginity" of the ethmoidal labyrinth, it will not have been in vain.

612 *MacBain Building.*

ETHMOIDITIS.*

By W. L. MASON, M. D., Richmond, Va.

In reviewing the literature upon this subject one finds very little written in the past few years on ethmoiditis alone, except as it occurs in children. Much work, however, has been done upon it in conjunction with other accessory sinuses in relation to eye disturbances, and it is possibly this phase of it that is being most actively studied today. We already hear criticisms of the unwarranted opening of accessory sinuses in cases of lowered vision due to some cranial condition or undiscovered foci of infection. Thus it behooves us to give these cases particular study, using every means at our disposal to arrive at an accurate diagnosis.

In considering ethmoiditis, it is important to bear in mind the anatomical position of the ethmoid, its relation and proximity to other sinuses, and, when we do, we are at once confronted with the fact that it is almost a matter of impossibility to have an ethmoiditis without some inflammation or suppuration in the adjoining sinus or sinuses. The ethmoid is really more a part of the nose. The inhaled air comes more in contact with it, is warmed and moistened more by it; hence, it is hard to conceive of even an acute coryza without involvement of the ethmoid. In fact, I believe that in every acute catarrhal process of the nasal mucosa all sinuses are more or less involved, because of continuity. Consequently, an ethmoiditis cannot be diagnosed by simply looking up the nose and finding pus, nor can it be said to be clear if not seen. We are all well aware of the fact that the easiest ethmoid condition to diagnose is frequently the hardest to treat.

Involvements of the ethmoid may be acute or chronic, which in turn may be either suppurative or non-suppurative. Skillern, in his book on accessory sinuses of the nose gives the following classification:

1. Acute Catarrhal Inflammation.
2. Acute Suppurative Inflammation.
3. Chronic Catarrhal Inflammation, or Hyperplastic Ethmoiditis.
4. Chronic Suppurative Inflammation.
5. Chronic Catarrhal Inflammation with Suppuration.

I. *Acute Catarrhal Inflammation* occurs more or less with every acute coryza, depending upon the severity of the attack. The mucosa of the uncinate process, bulla and external surface of turbinates become swollen, having the appearance of a myxomatous degeneration with punctiform hemorrhages. The interior of the cells shares in these changes and resolution occurs more slowly than in the general nasal mucosa. This condition may be the result of irritation alone.

II. *Acute Purulent Inflammation* is unusually associated with acute frontal sinus empyema; if arising idiopathically, it may be traced to one of the infectious diseases. Resolution occurs more readily than in other sinuses on account of the relatively good drainage of each cell, together with the action of the cilia. In this form of ethmoiditis the mucous membrane is deep red and covered with thick purulent secretion and is directly due to microorganismal invasion. In general, it may be compared to a particularly severe cold in the head.

In absolute occlusion of the nares, headache is constant with occasional neuralgic outshoots toward the deeper structures of the eyes. Ocular symptoms are prominent, such as pain on rotating, epiphora, orbital neuralgia on reading or otherwise concentrating the gaze. Anosmia is marked as long as nasal obstruction exists. Each attack predisposes toward another, leaving the disintegration of the mucosa more marked until a condition of chronicity develops, together with a marked tendency toward catching cold. Therefore, it is wise during the interim between attacks to make a comprehensive examination of this region with the view of ascertaining and correcting the cause.

III. *Chronic Catarrhal Inflammation, or Hyperplastic Ethmoiditis* is a result more of protracted disturbance in the nutrition of the ethmoid capsule than of inflammatory changes with bacterial invasion. Mechanical causes would seem to be pre-eminent. Continual slight irritation of a certain portion of the mucosa causes at first hyperaemia with subsequent out-flowing of serum into the interstitial spaces of the connective tissue. If the irritation be mild, the hypertrophy will tend to spread itself over a broad area, gradually los-

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology at its meeting in Norfolk, November 1, 1922.

ing its polypoid character. If, however, it be great, the continual collection of serous elements, assisted by gravity, will soon cause the appearance of a true mucous polyp.

In the early stages of hyperplastic ethmoiditis, a condition resembling chronic coryza predominates; later on in the disease, headache above and below the eyes, radiating towards the temples, is a predominating symptom. The exudate is of a thin watery consistency, assuming a purulent character during attacks of acute coryza.

The most common bronchial affection is asthma, while granular hyperplastic pharyngitis as well as eustachian catarrh may be classed as concomitant affections.

IV. *Chronic Suppurative Inflammation* occurs in two forms: (1) open or manifest empyema; (2) closed in on latent empyema. In the first instance the purulent secretions forming in the cells escape through the ostia and appear in the nose, while in the latent variety some occlusion prevents the pus from escaping, so that it gradually is secreted under pressure until it bursts or is evacuated by artificial means.

Suppuration in the ethmoid cells usually is an accompaniment of empyema in one of the larger cavities. Acute infectious diseases seem to exert a peculiar influence toward ethmoidal suppuration. The condition is invariably due to bacterial invasion of the secretions and is distinctly purulent with a tendency to drying and forming crista not only in the nares but in the pharynx and even the larynx. The headache in these cases, when free drainage exists, is frequently nil, while in the closed in variety it is sometimes unbearable, occurring over the root of the nose and directly on the vertex. Deep seated pain in the eyes is not present unless stagnation and pressure occur.

V. *Chronic Catarrhal Inflammation with Suppuration.* This classification has found considerable opposition, most observers contending that the suppuration precedes and does not follow polypoid hypertrophies. It has been an old and accepted view that the constant drainage of purulent secretions over a given area of nasal mucosa gives rise to polyposis, and therefore these hyperplastic structures are the results of secondary irritation due to the outflow of secretion; while occasional dissertation was made, it was not until Uffenorde states that the suppuration was more often secondary to the polyposis that interest was given this thought. He re-assures us as follows: From repeated attacks of simple catarrh numerous polyps made their appearance until a greater portion of the nasal chamber was occluded, and the possibility of cleansing was so seriously interfered with that the continually forming secretions became stagnated between the polyps, putrefaction followed, and infection resulted, particularly during an attack of acute coryza. It might be added that most writers do not accept Uffenorde's view in entirety, but believe nasal polyps, under certain circumstances, result entirely from the irritation of the purulent secretions exuded from diseased sinuses.

Report of Case of Ethmoid Abscess With Rupture Into Orbit.

Colored male, age 30, seen in October of 1921. Past history with reference to any sinus or eye trouble negative. There was marked displacement of eye forward and to the right. Pupil dilated and vision reduced to light perception. Movements of eye-ball extremely limited. Conjunctiva markedly swollen. Nerve atrophied. Through upper lid to inner side was a small sinus which discharged an almost constant drip of thick creamy yellow pus. Examination of nose in that side showed mucous membrane so much swollen that chamber was entirely blocked to respiration. Patient stated that trouble followed an attack of grippe, through which he suffered terrific headache and did not send for doctor until eye began to bulge and pain became unbearable.

I removed a portion of mid-turbinate the day he was brought in, establishing drainage by nasal route. One week later swelling of interior of nose was much reduced and eye had receded. At this time, I enlarged opening into ethmoid and cleaned out considerable thick cheesy substance. Small curved probe passed through opening in lid could be seen in nose. Ethmoid cavity was swabbed daily with two per cent iodine in glycerine solution and, at end of three weeks, discharge through lid was only intermittent, and at end of six weeks had stopped and opening closed. The eye on the affected side is blind due to atrophy of nerve and, while mucous membrane of nose at the end of two months was still somewhat thick, there was no excessive amount of drainage and sense of smell very little affected.

Stuart Circle Hospital.

A CASE OF COMPLETE HETEROTAXIA WITH ELECTROCARDIOGRAPHIC AND X-RAY STUDIES.*

By W. E. KILLINGER, A. B., M. D., Victoria, Va.

In reviewing the literature on the transposition of the viscera, we find that the cases are classified into four groups depending on the character and the amount of transposition.

Group I.—Complete heterotaxia in which all the organs are transposed. This misplacement is more frequently found than any of the conditions mentioned in the following groups. It is not necessarily associated with any defective organ, or any symptoms referable to the changed position. The five cases recently reported by Willius, had no complaint traceable to the abnormality.

Group 2.—Dextrocardia; or incomplete heterotaxia, in which the heart alone is transposed.

By recalling the embryological development of the heart, we can readily understand how transposition of this organ occurs. The two primitive cardiac tubes fuse into one about the fifteenth day, and auricular, ventricular, and bulbar subdivisions become evident. The tube soon becomes bent on itself which determines largely the axis of the heart. In congenital dextrocardia the tube bends in the opposite way instead of the normal S manner. Abbott explains this position by assuming that the embryo lies in an abnormal position within the chorion, so that its right side instead of its left side lies closer to the blood supply. Dextrocardia with the other organs normally placed is a relatively rare condition and, while the heart may be perfectly developed itself, according to Parsons and Smith the resulting disability may be serious. The liver and right lung impede the cardiac movements and hence result in incompetence. Smith state that patients with this anomaly are likely to complain of pain both locally and referred, which is the result of pressure on the intercostal nerve, the vagus, or its intercardiac endings. Later, there is a tendency for dyspnea and faintness to appear.

Group 3.—Incomplete heterotaxia in which all the organs except the heart are transposed.

This condition is very rare or, perhaps better, the condition is rarely recognized, as we do not have a displaced heart to lead us to suspect transposition of the other organs. One case has been reported in recent literature by Royer and Wilson. However, the normally placed heart in their case showed transposition of the auricles, a rudimentary left ventricle, and a patent foramen ovale. The patient died at the end of six years.

Group 4.—Heterotaxia, complete or incomplete, with or without cardiac misplacement, associated with various congenital lesions of the heart and great vessels.

A good example of this is the case reported by Nanages in the *Anatomical Record* for 1920-21. In this case the patient only lived four days. There were only three cardiac chambers, the right and left auricles, and a considerably enlarged ventricle. What should have been considered the trunk of the pulmonary artery with its prominent anterior position and left upward course, was really the ascending group of the aorta with its wide communication to the single ventricle. The real pulmonary artery was poorly developed and found on the left anterior side of the aortic trunk, and apparently continous with the base of the ventricle. We find many cases of mono-ventricular hearts reported, especially among the Philippino babies, in whom it apparently is not so very rare.

The case of complete heterotaxia reported in this paper belongs to the first group mentioned and came under my observation while making an electrocardiographic study.

Report of Case.

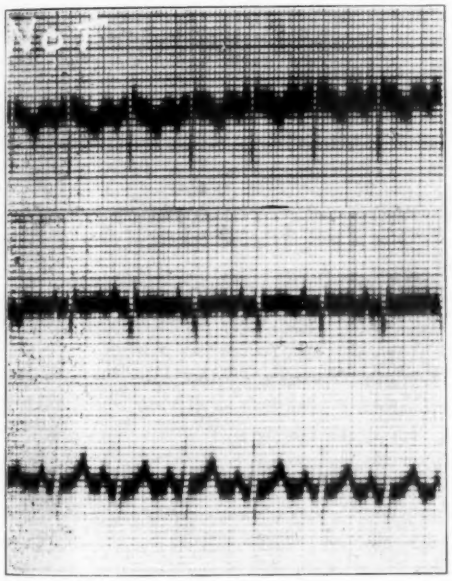
Female, white, age 14, referred to Kendig Hospital Clinic by Dr. W. J. Ozlin, for electrocardiographic examination. Family history revealed nothing important, she being one of six healthy children. She was a full time baby, normal delivery. Had measles, mumps and chicken-pox in infancy; since then has been in good health until one year ago when she began to suffer with a slight shortness of breath, and a persistent cough. Has lost some weight in past year.

She is slightly under-nourished, skin and mucous membranes good color, no cyanosis nor oedema, slight acne over back. Head of normal contour, and no tenderness over the sinuses or mastoids. Eyes and nose negative. Teeth in poor condition, tonsils cryptic, and injected. Neck is rather long but showed nothing of note. The chest was normal in contour, rather marked supraclavicular retraction,

*Read at the meeting of the Southside Virginia Medical Association at South Hill, Va., December 12, 1922.

equal in expansion. The lungs were negative to palpation and percussion, but a few rales were audible over the hilus of the left lung, posteriorly.

At rest the cardiac impulse was not visible, but after a little exercise the apex beat was clearly visible in the fifth interspace on the right side. By palpation and percussion the apex was definitely located in the fifth right interspace two c.m. outside the mid-clavicular line. The left border of the heart corresponded to the left border of the sternum. In the fourth interspace the right border of cardiac dullness was ten c.m. to the right of the sternum. A slight systolic murmur was heard over the apex; the other sounds were of normal quality.



Complete inversion of all deflections in Lead I. Simple tachycardia. Occasional ventricular premature contraction not shown in this plate.

Examination of the abdomen revealed the hepatic sign on the left side. The spleen could not be palpated, nor splenic dullness definitely made out. However, as we know, this is a difficult task in a normal subject, unless there is an enlarged spleen.

The extremities and reflexes were negative.

Blood and urine examinations showed nothing abnormal.

Roentgenograms of the chest revealed a clear cut dextrocardia. The barium meal showed the stomach on the right, with the pylorus pointing toward the left, also the shaded area of the liver to the left, with the sigmoid colon on the right.

Electrocardiographic studies revealed a complete inversion of all the waves in lead I, a simple tachycardia, and an occasional ventricular premature contraction.

The child has always been right handed.

Comment.

Transposition of the viscera is reported much more frequently now than formerly. This is not necessarily due to a more careful physical examination, but rather to the extensive use of the X-ray and electrocardiograph in examination. Where formerly the cases were found by the pathologist and the anatomist, now they are recognized by the clinician. Again due to life insurance, and public health examinations, many more people are examined by the physician than a few years ago.

The complete types of heterotaxy are not easily overlooked, it is the incomplete types that are apt to escape our recognition. In both types dextrocardia is almost the rule, and its discovery directs attention to the possibility of transposition of the abdominal organs, as was the experience in the case reported. Congenital misplacement of the heart is rare compared to acquired displacement, and the X-ray and electrocardiograph must be used to diagnose correctly. The most frequent cause for an acquired displacement of the heart is gross lesions in the respiratory tract, and these can usually be demonstrated. Schussler reports a case of acquired dextrocardia in a girl eleven years old. When the girl was two years old she contracted a severe pleural pneumonia, which was followed by extensive pleuritic adhesions in the right thoracic cavity. The heart was pulled over by these tough adhesions. And in the case reported by Carnot and Friedel, the acquired dextrocardia was due to the presence of a megacolon, which also displaced the liver and spleen.

Transposition of the abdominal viscera alone offers much difficulty without the aid of the X-ray. The left sided liver may be mistaken for a splenic enlargement, such as occurs in leukemia, Banti's disease, and other pathological conditions. In fact, Nadger reports a case in the *Indian Journal of Medicine*, that was treated for some time as a case of Banti's disease, until it was found that the left-sided mass felt was not the spleen, but the liver.

Again, Tanner reports a case in the *Long Island Medical Journal*, that was operated for a left salpingitis, and revealed a transposed viscera with a gangrenous appendix.

Labdeau, the French internist, suggests that these cases of transposition of the abdominal organs are not so rare as generally supposed. Their causes are not so easily explained as a simple dextrocardia. In the embryo the two gastric curves are situated on the same vertical medial plain and the two halves of the stomach are arranged symmetrically. Later the stomach is twisted in a manner so that its posterior border, the larger curvature, becomes convex and bulges toward the left, while the anterior border is concave and is turned to the right. This torsion causes the right part of the small intestine to be carried to the right. The various parts of the mesentery which attach the various segments of the intestinal tract to the vetebral column are more or less elongated. This explains the inversion of those portions of the intestinal tract that arise from the entoderm. The adnexa organs of the entodermic tube, the lungs, larynx, and trachea, the liver, and pancreas, are also changed; this would explain the sinistral position of the liver. In these cases the right lung has two lobes while the left has three.

With the introduction of the electrocardiograph, studies on congenital and acquired dextrocardia were begun. In 1911 Nicholai reported two cases of congenital dextrocardia in which the electrocardiogram showed a complete inversion of all the waves in lead I. Hoke reported the same findings a little later. Owen in 1912 reported a case of complete transposition of the viscera with the electrocardiographic studies made by Lewis, who states that the cardiograph offers a ready and certain method of diagnosing transposition of the heart.

If in the normal subject we take lead I from the left arm to the right arm, instead of from the right to the left as we usually do, an inverted picture will be obtained similar to that found in dextrocardia. This inverted picture applies to lead I alone, according to Lewis, because it is the only symmetrical lead. Acquired dextrocardia never gives the completely inverted electrocardiograms found in congenital dextrocardia.

Willius reports cardiographic studies in three patients in whom transposition was present. In the first patient there was complete inversion of lead I and II. In the second and third patients there was inversion only in lead I. He explains that the inversion of lead II in the first case was due to the exaggerated inclination of the heart to the right. Willius states that inversion of the deflection in lead I is definite evidence of congenital dextrocardia, and that his experience confirms the value of the electrocardiogram in the differential diagnosis of cardiac displacement.

Calvin Smith reports a case in which the long axis of the heart pointed toward the right side, and yet the electrocardiograms were normal. In this case, however, the dextrocardia was the result of dextroversion rather than inversion of the heart due to abnormal embryonical development. The striking differences in the electrocardiographic studies of congenital dextrocardia are easily understood when it is remembered that there exist two forms of this condition. In the one form the heart is not transposed, but rotated on its vertical axis, from left to right, as a result of a persistence of the embryonic stage, in which the apex was formed by the right half of the common ventricle. In this form the cardiograph shows no inversion of the waves in lead I. In the second one, represented by my case, transposition mirror picture rather than rotation is present.

It is in this form that the electrocardiogram shows inversion of all the waves in lead I. So we must conclude that the electrocardiogram affords the best method of differentiating the acquired displacement from the congenital misplacement, as well as the two types of dextrocardia from each other, while, of course, the X-ray gives a clear-cut picture of the abdominal organs.

THE PHYSICIAN AND THE QUACK.*

By J. E. RAWLS, A. B., M. D., F. A. C. S., Suffolk, Va.
Senior Surgeon to Lakeview Hospital.

Perhaps there are some present who would think that an apology would be in order to read a paper entitled "The Physician and the Quack," but not so. The subject of "the true orthodox physician and quackery" has not only interested each member and the medical societies of our profession, but the public at large. This relation or concern that exists between the Physician and Quack on the one side, and the laity or the public on the other, engendered

*Read before the Southside Virginia Medical Association at its meeting in Norfolk, June 13, 1922.

the paper's caption and the comments therein.

Members of the profession and the medical associations have been concerned greatly, and especially of late, as to the rapid spread of quackism. The remedy for this evil has been earnestly sought and at times apparently found, but so far the remedy or medicine has not had the desired effect, as the pandemic of quackery continues to spread. So we would like to take up this subject for a few moments under the following heads:

1st. The Physician and the Public as it is.
2nd. The Quack and the Public as it is.
3rd. The Physician and the Public as it should be.—The Remedy.

THE PHYSICIAN AND THE PUBLIC AS IT IS.

1st. The Physician is looked upon by the public as in the profession primarily for a livelihood, regardless of the arguments to the contrary. Verbal argument does not change the public mind.

2nd. The Physician is looked upon by the laity as a person to cure the sick, and the physician, as a rule by silence or otherwise, encourages this primarily, and his friends ignorantly advertise him as such, and his worth is in proportion to the number of his supposed cures.

3rd. The Physician is looked upon by the public for obvious reasons as a competitor with his brother physician, and with the quack.

THE QUACK AND THE PUBLIC AS IT IS.

1st. The Quack is looked upon by the public as in his profession primarily for a livelihood—regardless of the argument to the contrary. Verbal argument does not change the public mind.

2nd. The Quack is looked upon by the laity as a person to cure the sick. He encourages this by word and act, and his friends ignorantly advertise him as such, and his worth is in proportion to the number of his supposed cures.

3rd. The Quack is looked upon by the public as a competitor with his brother quack, and with the true physician.

If the foregoing be true, then the public so far has seen no difference between the physician and the quack. Then the question would naturally arise, why should the public not license and patronize the quack and call him doctor. And the public does all three, regardless of legislature and law. Why? Because of an improper relation between the Public and our Profession. This brings us to our third heading:

THE PHYSICIAN AND THE PUBLIC AS IT SHOULD BE. THE REMEDY.

The true relation of Physician and Public can only be brought about by a process of proper education, that we may know each other better.

1st. The Profession should be properly educated.

2nd. The Public should be properly educated. The physician should be better educated in the way of diagnosis. He should not only be able to recognize diseases of a definite visible or macroscopic pathology, but also diseases of an invisible, microscopic or psychopathic pathology.

We, as a profession, have become accustomed, since John Hunter's time, to think of diseases in terms of definite gross pathology. Symptoms without a definite gross pathology existed above the eyes of the patient. We diagnose such symptoms as essential, idiopathic, pseudobilious, neurotic, "hipped," hysterical, hypochondriac and the like. These terms are used in the presence of the patient with an air of wisdom, but in reality are dump heaps of professional laziness or ignorance.

Such a diagnosis, as nervousness, "hipped" and hysteria, feeds the quack, and we find that he is growing fat at our expense and humiliation. The physician usually loses interest after thoroughly examining a patient, when he is unable to find any definite pathology to account for the symptoms. This loss of interest is quickly observed by the patient and the patient begins to lose interest in the doctor. Finally, the patient asks the doctor what is his or her trouble. In reply he with a Solomonic air uses a few technical terms and ends by saying "nervousness or hysteria." These terms mean to the patient that the doctor's interpretation of her trouble is imaginary—she is faking. What happens? "The parting of the ways." In a few days she consults the quack. The physician sent him a patient. The quack through mental suggestion or otherwise relieves the patient of her symptoms. The patient is grateful and tells her friends; in a short while the quack's office and pockets are filled, and then we as a profession get busy with our legislature and medical societies in an attempt to prevent the influx of patients to the quack,—but still they go.

We are glad to see some of our profession, in the form of the psychiatrist, recognizing diseased entities without a definite gross pathology, and cures or relief brought about without grease and pills. In recent months we have seen quite a number of articles in medical journals and some books written on "Psychanalysis," which is a sign that the profession is beginning to recognize diseases not based on gross pathology.

Psychopathology is a specialty within itself. We cannot all become experts in this line, but we should recognize psychopathic patients and, if unable to relieve them, they should be referred to some reputable expert. In this way the charlatan will be robbed of his gold and silver, and the patient and public will rise to a higher level of knowledge and respect as to the real worth and mission of our profession.

Our profession in a general way should become acquainted with the vices and virtues (if there be any) of the various popular methods used by the various charlatans or quacks. We cannot meet their supposed cures and popularity by negation. The public will not swallow negatives, abuses and prosecutions. We can only meet this by a knowledge of what the quack can do and cannot do. *The way to conquer evil is by fairness and by the truth.* To do this, we, as a profession, must be in possession of the facts, and the public must come to know these facts or truths either directly or indirectly.

The profession must conquer patent medicine by a similar process—by a process of truth and not by the method of negation. Our profession should become acquainted with the ingredients of patent medicine formulae and their therapeutic value, and give this information to the public either directly or indirectly, as occasion demands. Treat the virtues and vices of the patent medicines with absolute fairness, and this will appeal to the public, and will not appeal to the patent medicine man. *Truth throws on light, and light banishes the halo of mystery that shrouds the average patent medicine formula.* The quack and patent *medicine man do not want us to use the method of truth and fairness*, but want us to use the *method of negation, abuse and threats. Why? Because the process of truth turns on light and dries him up, while the negative and abusive method advertises him, and darknes prevails and he grows fat.*

One of the greatest paying advertisements for the quack is the average physician. We discount and abuse him to the public with negations. Just what the quacks want—*it pays. Allow the most insignificant, unknown, incapable physician in a city to get in a controversy with* and be abused by one of the leading and most competent physicians of that city and it would immediately bring him into the limelight—would give him prominence. This method of quack advertisement, we, as a profession, should wisely avoid.

We have considered some of the information the profession should know. Now we will consider some knowledge the public should know.

The public should know the true mission of our profession.

They should know the true mission of the physician is an educator and not a pill-roller. The mission of the physician is to educate patient and public as to the laws governing physical health and happiness. The old proverb "an ounce of prevention is worth a pound of cure" should be reinterpreted in its true significance. The laity should look upon the physician as a consultant, as an advisor and a friend and a father against diseases, rather than mysterious and all-wise person to cure diseases. The first attitude strikes at the very cause while the latter strikes at the the effect. The first is more effective and this is where we should spend our time and the public should know it.

The charlatans or quacks do not spend their energy in the human prevention of diseases but are only known by their so-called cures and fees.

The subject of cure has always been more or less shrouded in mystery so far as the public is concerned, and our profession has done very little toward clarifying or unveiling this mystery. As a result, the public's estimate of the real value of a "doctor," whether a true physician or quack, is in proportion to the number of so-called cures. The quack takes advantage of this in his advertisements, and we fear that many of our profession are stained with the same vain-glory.

The public should know that a great number of diseases are self limited and that they terminate of their own accord, regardless of physician or medicine. They should be taught that such diseases as *measles, and the like, run a definite course, and terminate at a definite time, whether at such a time paregoric or dish-*

water is given, or whether it is administered by Dr. A or Dr. B.

This false idea as to the cure of diseases has given us many remedies in the profession, and has not stopped here, but has fattened the patent medicine man.

The true doctor should teach the patient and public that the true physician's mission is primarily to prevent diseases, and then to pilot the patient through the storms of his disease, giving aid in the way of medicine as indicated until its coarse has terminated. The public should know that there is no "typhoid medicine," no "pneumonia medicine" and the like. They should know that specifics are few in number.

We must cease to mystify the medical art. Mysticism has served its purpose. It has made many of us appear wise when we were mostly otherwise. It has done more. Through this mystery and ignorance on the part of the public, quacks and patent medicines have sprung up and flourished.

Let us turn on the light of truth, and quackery and its remedies will gradually shrink. Let the public know that we, as a profession are broadminded, and possess, or are willing to possess, all known truth, so far as remedial agents are concerned, and are willing to compete fairly and in the open with any professional sect, cult or creed. Even the devil can be conquered by truth.

Proceedings of Societies

The Piedmont (Va.) Medical Society

Met at The University of Virginia Hospital, Saturday May 26th, with a registered attendance of thirty-eight physicians.

Among the cases shown at the clinical demonstrations was one of Multiple Exostosis, by Dr. I. A. Bigger; Osteitis Fibrosa Cystica, Dr. S. H. Watts; Endocarditis, Dr. H. B. Mulholland; Some Common Eye Diseases, by Dr. R. F. Compton; Types of Paralysis Due to Syphilis, by Dr. D. C. Smith; Rectal Examination in Prostatic Obstruction, by Dr. J. H. Neff; Pernicious Anemia; Pneumonia Simulating Typhoid, by Dr. J. S. Davis.

After the banquet, Dr. J. C. Flippin read a paper entitled "Some Types of Purpura with Report of Cases," and Dr. W. H. Goodwin one on "Syphilis of the Bones."

Election of officers for the ensuing year was as follows: President, Dr. E. D. Davis, of Standardsville; Vice-Presidents, Dr. J. F. Thaxton, Tye River and Dr. M. L. Rea, Charlottesville, Va.; Secretary-Treasurer, Dr. Lewis Holladay, (re elected) Orange, Va. The next meeting will be held in Charlottesville the last Saturday in November.

LEWIS HOLLADAY, *Secretary.*

The Accomack (Va.) Medical Society

Held a meeting in Onley, Va., May the 3rd. This was the first meeting of the Society since 1919 and was a most enthusiastic one. There were eighteen members and several visitors in attendance. In the absence of the president, Dr. W. F. Kellam, Onley, the meeting was called to order by Dr. W. W. Kerns, of Bloxom. Dr. J. Fred Edmonds, Accomac, was elected a member, and Dr. John O. Gaston, recently elected County Health Officer, and Miss Sarah Crosley, County Nurse, were elected to honorary membership. Talks were given by Dr. Gaston, Mr. A. H. Straus, of the State Board of Health, Richmond, Dr. Geo. C. Payne, recently elected State Epidemiologist of Virginia, and several others.

Dr. J. L. DeCormis, Accomac, was elected president, Dr. W. M. Burwell, Chincoteague, vice-president, and Dr. John W. Robertson, Onancock, secretary-treasurer.

The Medical Society of Virginia, Maryland District of Columbia

Held its spring meeting May 16, at Manor Club, near Norbeck, Md., with members of the Montgomery County (Md.) Medical Society as hosts. The papers were of a high type and most interesting. The following officers were elected for the ensuing year: President, Dr. William J. Mallory, Washington, D. C.; vice-president, Dr. Jacob W. Bird, Sandy Spring, Md.; recording secretary, Dr. W. T. Davis; corresponding secretary, Dr. Joseph D. Rogers; treasurer, Dr. Robert Scott Lamb. The last three are of Washington, D. C., and were re-elected. Arrangements for this meeting were in charge of Drs. Joseph D. Rogers, of Washington, and J. W. Bird, of Sandy Spring, Md.

The Graduate Nurses' Association of the State of Virginia and the State League of Nursing Education have Annual Meetings.

The Graduate Nurses' Association held their annual meeting in Richmond, May 23 and 24,

Miss L. L. Odom, of Sarah Leigh Clinic, Norfolk, presiding. The sessions were interesting and largely attended. One of the interesting matters brought up for attention at this meeting was the endorsement of resolutions for the establishment of a chair of nursing at the University of Virginia, in connection with the University Hospital. While no action was taken other than endorsement of the resolutions, the nurses are already making plans for raising he $50,000 it is estimated such a chair will cost. Miss L. L. Odom, of Norfolk, was re-elected president; Miss Marie Baptiste, Richmond, and Miss Mary Cowling, Lynchburg, vice-presidents; Miss Blanche Webb, Norfolk, secretary; Miss Margaret Cowling, University of Virginia, treasurer; and Misses Agnes Randolph and Elizabeth Webb, Richmond, directors.

Miss Virginia Thacker, of Lewis Gale Hospital, Roanoke, was president of the State League of Nursing Education, which held its meetings on the evening of the 24th and morning of the 25th. At the closing session of the League, Miss Martha Baylor, of St. Luke's Hospital, Richmond, was elected president for the coming year.

The Southwestern Virginia Medical Society

Held its semi-annual meeting in Christiansburg, May 17 and 18, under the presidency of Dr. R. H. Woolling, of Pulaski. The program was most interesting. Fourteen new members were received at this time. The next meeting is to be held in Abingdon, September 19 and 20. Dr. E. G. Gill, Roanoke, is secretary of this Society.

The Medical Association of The Valley of Virginia

Met in Winchester, May 31, under the presidency of Dr. Hunter H. McGuire, of that place. Dr. Alex. F. Robertson, Jr., Staunton, was in his accustomed place as secretary. Dr. George Stragnell, of New York City, was an out-of-State visitor at this meeting, and read a paper on "Psychology in Medicine." There were fifty members and one visitor in attendance. Eight new members were elected. The next meeting is to be held at Staunton, in September, 1923.

Walter Reed Medical Society.

The Spring meeting of this Society was held at Hampton, Va., May 2 and 3, at which time a most interesting program was enjoyed by those in attendance. Col. Louis A. Thompson, Hampton, was elected president; Dr. Harry D. Howe, Hampton, vice-president, and Dr. L. E. Stubbs, Newport News, was re-elected secretary-treasurer.

State Society News.

GOLF TOURNAMENT BEING ARRANGED TO BE PARTICIPATED IN BY MEMBERS OF THE MEDICAL SOCIETY OF VIRGINIA UPON FIRST DAY OF MEETING.

The Committee of Roanoke Academy of Medicine has completed the formulation of plans for a Golf Tournament to be held on the opening day of the meeting, and with this in view notices have been sent to the Secretaries of the different local organizations throughout the State requesting lists of such members as may be interested, and already replies have been received from twenty-four members who hope to participate.

The contest will be for a cup which will be presented by the Roanoke Academy of Medicine and will be over thirty-six holes. It will be announced later as to whether the awarding of the cup shall be for the one contest or whether it will be of more interest to plan this over a three year period. The handicaps are being worked out and will be reported in detail at a later date.

The Committee wishes to make it clearly understood that the schedule will not in any way interfere with the scientific program for the reason that the tournament will begin on the morning of Tuesday the 16th and will be completed in plenty of time for the opening session in the evening.

The railroad schedules fit in very nicely for those in different sections of the State who are unable to leave home until Monday evening since sleeper accomodations can be had from various directions so that members may arrive here on the early trains of Tuesday. Further details of the contest will be announced later and it is hoped that the tournament may be an enjoyable feature of the meeting.

J. W. PRESTON,
Chairman Publicity Committee.

ROANOKE HOTELS AND THEIR RATES FOR THE MEETING OF THE MEDICAL SOCIETY OF VIRGINIA.

Chairman of the Hotel Committee, Dr. E.

G. Gill, announces the names of the following hotels in Roanoke and the rates they will give for our convention. He suggests that the members make their reservations direct with the hotel managers, and that they make these at an early date. If there is any trouble, however, write the Hotel Committee, Dr. E. G. Gill, MacBain Building, Roanoke, chairman.

Hotel Roanoke,
Single rooms without bath.....$1.50 and $2.00
Single rooms with bath .....$3.00 and $4.00
Double rooms with bath .....$5.00 and $6.00
Double rooms without bath ...$3.50 and $4.50

Shenandoah Hotel,
Single room with bath .....$2.00 and $3.00
Single room without bath .....$1.50 and $2.00
Double rooms without bath $2.50
Double rooms with bath .....$3.00 and $4.00

Ponce de Leon Hotel,
Single rooms with bath $3.00
Single rooms without bath.....$2.00
Double rooms without bath ...$2.50
Double rooms with bath $4.00

Lenox Hotel,
Single rooms with bath $2.00
Double rooms without bath $4.00

Raleigh Hotel,
Single rooms without bath .....$1.25 and $1.50
Single rooms with bath .....$2.50 and $3.50
Double rooms with bath $3.00
Double rooms without bath $2.50

Miscellaneous

THE OLD TIME COUNTRY DOCTOR.

Gone is the old time country doctor.
You see him now no more.
With many other old time folk,
He's pass'd to another shore.

Don't you recall the faithful nag
He rode o'er hill and dale?
The saddle bags, too, that always held
The pills that never did fail?

None were so poor, but he would go,
No matter where, nor when.
And we may surely safely say,
He was loved by all good men.

If there's a home across the stream
For saints immortal fair,
That good, old country doctor then,
Is in his home and happy there!

—*Edward Madison Jones.*

The Truth About Medicine

During April the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

Abbott Laboratories
Neutral Acriflavine-Abbott
Tablets Neutral Acriflavine-Abbott, 0.03 Gm. (½ Gr.)
Enteric Coated Tablets Neutral Arciflavine-Abbott, 0.03 Gm. (½ Gr.)

Hynson, Wescott & Dunning
Phenoltetrachlorphthalein—H. W. & D.
Ampules Phenoltetrachlorphthalein—H. W. & D.

Mallinckrodt Chemical Works
Carbon Tetrachloride Medicinal—M. C. W.

Merck & Co.
Skiabaryt (for Rectal Use)—Merck.
Skiabaryt (for Oral Use)—Merck.

Powers-Weightman-Rosengarten Co.
Carbon Tetrachloride C. P.—P. W. R.

Nonproprietary Articles
Neutral Acriflavine
Carbon Tetrachloride Medicinal.

NEW AND NON-OFFICIAL REMEDIES.

Tincture No. 111 Digitalis—P. D. & Co.—A fat-free tincture of digitalis which, standardized by the minimum lethal dose frog heart method of Houghton, is 50 per cent. stronger than tincture of digitalis—U. S. P. The actions and uses of tincture No. 111 digitalis—P. D. & Co., are the same as those of tincture of digitalis. It was introduced at a time when the "fat" of digitalis was believed to cause gastric disturbances. This claim of superiority is not tenable and the preparation is sold simply as a standardized tincture of digitalis. To minimize deterioration through light and air, the preparation is marketed in one ounce amber vials and saturated with carbon dioxide. Parke, Davis & Co., Detroit, Mich. (Jour. A. M. A., April 7, 1923, p. 1003).

Borcherdt's Malt, Cod Liver Oil and Iron Iodide.—Each 100 Cc. contains ferrous iodide 0.88 Gm. (4 grains per fluidounce), cod liver oil, 25 Cc. and Borcherdt's malt extract (plain) 75 Cc. Borcherdt's Malt Extract Co., Chicago. (Jour. A. M. A., April 21, 1923, p. 1143).

Carbon Tetrachloride Medicinal.—Carbon Tetrachloride has narcotic and anesthetic properties somewhat similar to those of chloroform. It has recently come into use as a vermifuge in the treatment of hookworm disease. It also removes some intestinal parasites other than the hookworm. It is reported that usually about 95 per cent. of the hookworms are removed by the first dose. Its use appears to be relatively safe, but serious symptoms and even death have been reported. It is administered in water, milk or gelatin capsules on an empty stomach, followed by a purgative dose of magnesium sulphate.

The dose is from 2 Cc. to 3 Cc. (30 to 45 minims) for adults. Carbon tetrachloride is a heavy liquid, having an odor somewhat like that of chloroform. It is almost tasteless and almost insoluble in water.

Carbon Tetrachloride Medicinal—M. C. W.—A brand of Carbon Tetrachloride Medicinal—N. N. R. Mallinckrodt Chemical Works, St. Louis.

Carbon Tetrachloride C. P.—P. W. R.—A brand of Carbon Tetrachloride Medicinal—N. N. R. Powers-Weightman-Rosengarten Co., Philadelphia. (Jour. A. M. A. April 21, 1923, p. 1143).

Modified Pneumococcus Vaccine.—A vaccine or "antigen" prepared by digesting a suspension of pneumococci, types I, II, III and Group 4 at 37 C., until about 95 per cent. of the organisms have become gram-negative and the mixture is relatively nontoxic to guinea pigs. It is believed that this method yields a vaccine with greater protective power. There is some evidence that this vaccine is of value in the treatment of lobar pneumonia. It is not intended for prophylactic use.

Pneumococcus Antigen-Lilly.—A modified pneumo-

coccus vaccine—N. N. R. It is marketed in 5 Cc. vials, each Cc. containing twenty billion partially autolyzed pneumococci. Eli Lilly & Co., Indianapolis, Ind. (Jour. A. M. A., April 21, 1923, p. 1143).

Sulpharsphenamine-Squibb.—A brand of sulpharsphenamine—N. N. R. (See Jour. A. M. A., March 31, 1923, p. 919). It is supplied in ampules containing respectively, 0.1 Gm., 0.2 Gm., 0.3 Gm., 0.4. Gm., 0.5 Gm. and 0.6 Gm. E. R. Squibb & Sons, New York City. (Jour. A. M. A., April 21, 1923, p. 1143).

Neo-Silvol.—A compound of silver iodid with a soluble gelatin base containing 18 to 22 per cent. of silver iodid in colloidal form. Neo-silvol, even in concentrated solutions, causes neither irritation of mucous membranes nor coagulation of albumin. It does not stain the skin. It is claimed that neosilvol in laboratory tests for germicidal value has been found as effective as phenol in its action on bacteria. Neo-silvol is intended for the prophylaxis against, and treatment of infections of accessible mucous membranes and is claimed to be indicated in affections of the genito-urinary tract and of the eye, ear, nose and throat. Parke, Davis & Co., Detroit, Mich. (Jour. A. M. A., April 28, 1923, p. 1218).

Phenoltetrachlorphathalein—H. W. & D. A dibasic dye formed by the condensation of phenol and tetrachlorphthalic acid or its anhydride. Phenoltetrachlorphthalein has been used for the determination of the functional output of the liver. It can be used, *in the form of the sodium salt, intravenously;* but cannot be given subcutaneously or intramuscularly. The substance may also be obtained in the form of Ampules Phenoltetrachlorphthalein containing a solution of disodium phenoltetrachlorphthalein. Hynson, Wescott & Dunning, Baltimore, Md. (Jour. A. M. A., April 28, 1923, p. 1218).

PROPAGANDA FOR REFORM.

Alcohol and Disease.—Recently a statistical report regarding the possible influence of alcohol on the prognosis of pneumonia in a large municipal hospital has been published. The data for nearly 3,500 cases of lobar pneumonia showed that, with reference to the patient's habits of indulgence in alcoholic drinks, the mortality was higher in moderate users than in light users or abstainers, and that the mortality is much higher in excessive users than in moderate users. It must be borne in mind, however, that these statistics have no bearing on the use of alcohol in therapy. (Jour. A. M. A., April 7, 1923, p. 1007).

Incompatibility of mercurochrome—220 soluble with local anesthetics and alkaloids.—An accident from the precipitation of mercurochrome-220 soluble by procain has been reported. The A. M. A. Chemical Laboratory has confirmed the incompatibility. The following local anesthetics were found to give precipitates when treated with mercurochrome-220 soluble solution: alypin, apothesin, benzocain, butyn, cocain, hydrochlorid, B-eucain lactate, phenacain, procain, propaesin, quinin and urea hydrochlorid, tropacocain hydrochlorid and stovain. Many vegetable alkaloids were also found to be incompatible with mercurochrome-220 soluble. (Jour. A. M. A., April 14, 1923, p. 1091).

A rapidly eliminated digitalis body.—At the request of the Council on Pharmacy and Chemistry, Dr. R. A. Hatcher undertook to elaborate a digitalis preparation that would be stable, that would contain a definite amount of the readily absorbable principle and that would be suitable, if possible, for intravenous administration. As a result of his work he has isolated a digitalis body which behaves unlike any constituent of digitalis heretofore described. A nearly fatal dose is eliminated within a few hours after its introduction into a cat. It remains to demonstrate the therapeutic value of this new digitalis preparation through the co-operation of the clinician and the pharmacologist. The intravenous administration of digitalis is rarely necessary if digitalis is properly given by mouth. For rare cases in which intravenous medication administration is indicated, it appears that Dr. Hatcher has prepared a drug whose action is less persistent than other digitalis preparations now available and which is simply and inexpensively prepared. (Jour. A. M. A., April 14, 1923, p. 1072).

Nephritin (Reed and Carnrick), was reported on by the Council on Pharmacy and Chemistry in 1907. The following is a summary of this report: The advertising claims for Nephritin are based on the theory that certain granules in the renal cells, called "grains of segregation" and claimed to have been observed microscopically, carry on the secretion of urinary constituents and that a deficiency of them is the cause of nephritis. While Renaut, who formulated the theory, recommended as a cure for nephritis the maceration of fresh kidneys in physiologic sodium chlorid solution, Reed and Carnrick urged objection to the maceration and explained that nephritis represents all the action of the maceration, but is fifty times as potent. Nephritin is stated to be "the grains of segregation from the cortex of the pig's kidney, the renal connective tissue being eliminated." It appeared impossible that the microscopic structures claimed to be present in nephritin could be isolated as such from the connective tissues, and, on inquiry by the Council, no information on this point was to be had. Further, the firm presented no evidence for the claimed action of nephritin or for the claim that it was fifty times stronger than the maceration. (Jour. A. M. A., April 21, 1923, p. 1167).

The treatment of syphilis.—The general view is that neither mercury or arsphenamin positively cures in cases in which the disease has existed long enough to become well established as a systemic disease, but that they both tend to cure and that both are valuable in treatment. It is the general opinion of syphilologists that when chancres are seen that are unmistakable, these cases should be vigorously treated and that there is a good chance of aborting the disease at this time. If early cases are not treated until the Wassermann reaction has become positive, there is a difference of opinion as to treatment. There are syphilologists who believe that these early cases are better treated by mercury alone until the patient has had an opportunity to develop all the immunity of which he is capable. After the patient has established all the resistance of which he is capable, these syphilologists would treat with mercury and arsphenamin. It is becoming increasingly apparent that the advantages of the new method of treating syphilis in which arsphenamin plays the larger part, are by no means certain. The trend of the last few years has been in the direction of placing more reliance on mercury and the older methods in the treatment of syphilis. (Jour. A. M. A., April 21, 1923, p. 1167).

Herradora Specialties not accepted for N. N. R.—Early in 1922 the Scientific Chemical Co., New York City (Marcus Aurelio Herradora, M. D., President), requested the Council on Pharmacy and Chemistry to consider his intravenous preparations. The firm sent specimens of the following products "for Intravenous Use": Herradora's Arsenic Compound, Nos. 1 to 6, Herradora's Arsenic and Hypophosphites, Herradora's Arsenic and Iron Compound, Herradora's Calcium Compound, Herradora's Calcium-Sodium-Glycerophosphate, Herradora's Chlorids Compound, Herradora's Chlorids with Iron Compound, Herra-

dora's Creosote Compound, Nos. 1 and 2, Herradora's Digitalin Compound, Herradora's Glycerophosphate-Iron and Nickel Compound, Herradora's Guaiacol Compound, Herradora's Iodids Compounds, Herradora's Hexamethylenamine and Guaiacol Compound, Herradora's Iron, Manganese and Nickel Compound, Herradora's Mercury Compound, Herradora's Quinine Compound, Nos. 1 and 2, Herradora's Sodium Iodid, Herradora's Sodium Iodid-Salicylate-Guaiacol Compound.

After examining the submitted evidence the Council concluded that the Herradora Specialties were inadmissible to New and Nonofficial Remedies for the following reasons:

1. The therapeutic claims advanced for them are unwarranted and exaggerated, and there is no evidence to warrant the intravenous administration of them.

2. With one exception ("Herradora's Sodium Iodid"), the preparations are mixtures of drugs, the administration of which is not in the interest of sound therapy, particularly when these preparations are intended for intravenous use.

3. Herradora's Sodium Iodid is marketed with unwarranted therapeutic claims.

4. With the exception of Herradora's Sodium Iodid, Calcium Compound, and Iodids Compound, all of the Herradora Specialties are claimed to contain ingredients, the identity and uniformity of which are not insured by their inclusion in the U. S. Pharmacopoeia, National Formulary, or New and Nonofficial Remedies.

The Council submitted its objections to these Herradora Specialties to the Scientific Chemical Co., to permit the firm to meet these objections so far as possible. However, advertising mailed in February, 1923, convinced the Council that the propaganda contained in the firm's advertising is detrimental to the rational practise of medicine and the public welfare. Therefore, it authorized publication of its report. (Jour. A. M. A., April 28, 1923, p. 1259).

Book Announcements

Clinics and Collected Papers of St. Elizabeth's Hospital, Richmond, Va. Vol I, 1922. Contributed by the Staff. Illustrated by Helen Lorraine. St. Louis. C. V. Mosby Company. 1923. Cloth. 8vo. 560 pages. Price $7.50.

The demand for such volumes as this is no longer questionable. They have appeared at intervals from various hospitals throughout America for many years. The older title "Hospital Reports" has in some cases been changed first to "Collected Papers" and now to "Clinics and Collected Papers." The older reports were printed in limited numbers and save in few cases were not offered for sale. These of the present day are printed in large numbers, extensively advertised by publishers, and are easily accessible to purchase.

The present volume is the first of its kind emanating from a Southern city and for this reason is the cause of peculiar local and regional pride. It is of convenient size, 560 pages, easily readable, comprehensive and beautifully and abundantly illustrated by Miss Helen Lorraine's superb drawings and many photographs, Roentgenograms and charts. The table of contents is arranged in parts and chapters according to subjects. The index appears to be one hundred per cent perfect. The subjects considered are met with frequently in practice. To read it has been a great pleasure, considerable profit and genuine inspiration. We commend it highly.

Of the total sixty-six contributions, thirty-eight are from Dr. Horsley Sr.; one with the late Dr. R. H. Whitehead of the University of Virginia, one with Dr. Vaughan, and one with Drs. Vaughan and Dodson. Dr. Warren T. Vaughan contributes thirteen papers, one with Dr. Horsley, one with Drs. Horsley and Dodson, one with Miss Van Dyke. From Dr. Austin I. Dodson there are six papers, one with Dr. Vaughan, one with Dr. Ashworth and one with Drs. Horsley and Vaughan. There is one contribution from Dr. Paul C. Colonna, one from Dr. J. S. Horsley, Jr., and one by Dr. O. O. Ashworth. None of these three are listed among the members of the staff but are or have been internes.

The book is made of case reports not hitherto published and reprinted journal contributions from various members of the staff. The first 31 pages, introductory in purpose, are occupied by short papers from the Superintendent, Miss Stone, the business manager, Mr. Todd, the Dietitian, Miss Van Dyke, and a charming story by the Illustrator, Miss Lorraine, giving a brief outline of the history of medical illustrating.

The short article by Miss Stone is especially valuable for the spirit of human kindness exhibited by the Superintendent and all internal officers and employees toward patients and should be read and emulated.

Miss Van Dyke, the dietitian, reminds us that many human beings "live to eat;" and applies to hospital management the idea embodied in an axiom from the commercial world, "A satisfied customer is the best advertisement." She might also have reminded us that

> "We may live without music,
> We may live without books,
> But civilized man
> Cannot live without cooks."

There is also an interesting article by Miss Van Dyke and Dr. Vaughan on Postoperative

Dietotherapy. This should be studied especially by nurses, to learn the harmfulness of the pernicious practice of spoiling delicious lemonade by decorating it with white of egg.

This being the first volume, opportunity was taken for preservation of some of the older contributions of Dr. Horsley, some of which date back as far as 1910.

There are reports of much research work on the part of Dr. Horsley, especially in operative technique upon the stomach, intestines and blood vessels, and one instructive report showing the negative results of experimental reconstruction of the common bile duct.

Considerable text and many beautiful illustrations are devoted to plastic work about the face and neck, cancer in general and of the breast and skin. In this part of surgery Horsley is an artist in the class with Miss Lorraine.

On pages 365 and 366 are two photographs of a remarkable case of a patient weighing 105½ lbs. before and after being removed from an ovarian cyst weighing 116½ lbs.

The oration, "The Ideals of the Surgeon," is a genuine and eloquent inspiration and should be read and re-read by every aspiring surgeon.

The writings of Dr. Vaughan are extremely interesting and show thorough study. Especially instructive are the case reports of "Allergic Headache" and a paper on "Lead Poisoning from Drinking Moon-Shine Whiskey."

The anatomy of a six-legged dog by Dr. J. S. Horsley, Jr., written while a student at the University of Virginia, is a remarkable study by this scholarly son of the elder Horsley.

The volume before us, like much of current literature, shows progress in standardization of surgeons and we hope that the time is not far distant when we will have a report entitled "Clinics, Collected Papers and the Immediate and Ultimate Effects of Surgical Operation and Medical Treatment in Every Patient Treated." In this way and in this way only, can doctors have a real basis upon which to refer patients for superior special treatment and hospital managers a real basis upon which to appoint staff members. We welcome this volume and wish for speedy progress in this direction on the part of every surgeon in every hospital in America.

Dr Horsley has issued at least two annual reports of St. Elizabeth's Hospital, 1921 and 1922. The "Clinics and Collected Papers" would have been improved by the inclusion of these two reports. We hope this will be done next year.

G. P. La Roque.

Dreads and Besetting Fears. Including States of Anxiety, Their Causes and Cure. By TOM A. WILLIAMS. M. B., C. M. Membre Correspondant Etranger de la Societe de Neurologie de Paris. Membro Correspondente Academia Nacional de Medicina do Rio de Janeiro, etc. Neurologist to Freedman's Hospital. Boston Little, Brown, and Company. 1923. Mind and Health Series. 12 mo. Cloth. 217 pages. Price, $1.75 at booksellers.

The Unadjusted Girl. With Cases and Standpoint for Behavior Analysis. By WILLIAM I. THOMAS. Foreword by MRS. W. F. DRUMMER. Boston. Little, Brown, and Company. 1923. Criminal Science Monograph No. 4. 8vo. Cloth. 261 pages. Price $3 net.

Applied Psychology for Nurses. By DONALD A. LAIRD, Assistant Professor of Psychology, University of Wyoming; Lecturer in Nursing Psychology, Ivinson Memorial Hospital School of Nursing. J. B. Lippincott Company. Philadelphia and London. Lippincott's Nursing Manuals. 1923. 8vo. Cloth. 236 pages with 49 illustrations. Price $2.50.

Senile Cataract. Methods of Operating. By W. A. FISHER, M. D., F. A. C. S., Chicago, Ill. Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College, etc. With the collaboration of PROF. E. FUCHS, Vienna, Austria; PROF. I. BARRAQUER, Barcelona, Spain; LT. COL. HENRY SMITH, London, England; DR. H. T. HOLLAND, Shikarpur, Sind, India; DR. JOHN WESTLEY WRIGHT, Columbus, O. 256 pages. 160 illustrations, 112 of which are colored. Published by Chicago, Eye, Ear, Nose and Throat College, Chicago, Ill. 12mo. Cloth. Price $2.50 and will be sent postpaid on approval.

Merck's Manual of the Materia Medica. Fifth Edition. A Ready Reference Pocket Book for the Physician and Surgeon. Compiled and published by Merck and Company. New York, St. Louis, Montreal. Works at Rahway, N. J. 1923. 581 pages. Flexible linen cloth, 50c; artificial leather, $1.00.

Venereal Disease in the American Expeditionary Forces. By GEORGE WALKER, M. D., Late Colonel, Medical Corps, U. S. A. Medical Standard Book Company, Baltimore, Md. 1922. 8vo. Cloth. 237 pages.

Nursery Guide for Mothers and Nurses. By LOUIS W. SAUER, M. A., M. D. Senior Attending Pediatrician, Evanston Hospital; formerly Attending Physician Chicago Infant Welfare, etc. St. Louis. C. V. Mosby Company. 1923. Illustrated. Cloth. 188 pages. Price $1.75.

The Heart in Modern Practice. Diagnosis and Treatment. By WILLIAM DUNCAN REID. A. B., M. D., Chief of Heart Clinic at Boston Dispensary; Junior Assistant Visiting Physician and Member of Heart Service at Boston City Hospital. Philadelphia and London. J. B. Lippincott Company. 1923. 32 illustrations. 352 pages. 8vo. Cloth. Price $5.00.

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Editorial

Influence of Insulin on the Symptoms of Diabetes Mellitus.

From the time of Celsus and Aretaeus, who lived in the first century of the Christian era, to the present time, the ugly symptoms of diabetes have all but baffled the best efforts of the medical profession. The dieting of diabetics, in late years, however, has enabled physicians to assuage the course and modify the degree of severity of some of the more harassing symptoms of this ancient disease, but it is only with the advent of this potent extract of pancreas, insulin, produced in a form innocuous to the body, when subcutaneously injected in properly guarded dosage, that the physicians have come into the possession of an agent of unsurpassed metabolic importance. This new product possesses the power accurately to reduce, for definite periods of time, the severity, and often altogether, remove the ugly symptoms of diabetes. The voracious appetite, the extreme thirst, the copious secretion of urine, and the emaciation of the body, no longer need be dreaded, because insulin will drive "these wolves" away. Before the hypodermic syringe of insulin, properly administered, even coma relaxes its grip upon the brain. Insulin displaces the anesthetizing poison of perverted fat metabolism for carbohydrate metabolism.

Thirst

Thirst has always been one of the most annoying symptoms of diabetes. Many of these patients only begin to recognize that there is something wrong with them when they realize that they have an unusual and insatiable thirst. This symptom is quickly alleviated by the use of insulin; it disappears as the blood sugar curve falls toward the normal level. In connection with the disappearance of thirst, there is marked relief from dryness of the mouth and viscidity of the saliva. The whole status of the mouth improves at once with the use of insulin. Our experience of the use of insulin justifies the assertion that, for the alleviation of this group of symptoms, alone, the discovery of insulin should rank high in the list of important medical discoveries.

Appetite and Hunger

The administration of insulin, in connection with the adjustment of a diet suitable to the needs of the patient, is attended by a distinct surcease from the "bread riot" that is ever raging in the epigastrium of the diabetic. Physiologically, there may be a difference between appetite and hunger, or, at least, they may be explained on different theories, but in the life of a diabetic, appetite is more than a "complex of sensations operating in the nervous system along with memory impressions of the sight, taste, and smell of palatable food," an empty stomach. Appetite and hunger operate upon the mental and moral attributes of the diabetic with profound effect and any agent that may help lessen the gnawing appetite and relieve the pangs of hunger by the normal intake of food is worthy of honorable mention in the category of therapeutic agents. As insulin reduces the hyperglycemia, the distressing hunger is relieved and the appetite is more normally appeased. In all our cases, this remarkable effect has been observed. The patients comment themselves with gratifying satisfaction upon the great relief felt in the liberation from constant and unremitting sensations of recurring hunger, so long an annoyance.

Polyuria

The enormous quantity of urine secreted by diabetics, in some cases, amounts to a consideration of great importance in its symptomatology. This symptom, while not always of paramount importance with the patients, is one that stands out as significant and is, indeed, discomforting as it is characteristic. Some

patients are so pressed by the desire to void a distended bladder of urine, that they must urinate at very short intervals. Such an exigency amounts to a serious symptom. This, also, is one of the unpleasant features of the disease that yields to the use of insulin in connection with diet. Few patients fail to remark that the night's sleep is no longer interrupted by the necessity of voiding large amounts of urine, as was the case before insulin and diet were begun. Most of our cases have secured relief from this symptom and its companion symptom of thirst as the high blood sugar level yielded to the influence of insulin.

Strength and Emaciation

Languor and weakness, along with loss of weight, have long stood out as a group of symptoms more or less constant in diabetes, varying in degree with the type and severity of the disease. In mild or incipient cases, the emaciation and body-strength are not so obtrusive as in the severe or malignant forms. But nevertheless, in diabetes, weakness and loss of weight rather uniformly appear and are important evidences of the disease and serve to subjectively affect the patient profoundly. One of our patients has repeatedly expressed the opinion that, following her daily dose of ten units of insulin, she feels for four to six hours a definite and clear-cut exhilaration of body and mind. This patient has said that the ten units given to her before noon "stimulates" her until bedtime and that now her mind "works better" than it has for years. But in nearly all cases, the patients say that they feel stronger and have more endurance than they had before the use of insulin. In this respect, our patients have commented more emphatically than they have during the course of the mere dietary treatment in which the urinary-sugar examinations served as a guide for the amount of carbohydrate given. Probably, the same wholesome effect of increase in strength would have been gotten had the blood sugar curve been as carefully lowered by fasting and slow-carbohydrate feeding in dietary treatment. The insulin and diet treatment give control over hyperglycemia and in that way favorably affect the strength and well-being of the diabetic to a remarkable degree. Again, the gain of weight, within limits in selected cases, may be permitted with the administration of the carbohydrate-oxidizing-insulin. This fact, if proven to be uniformily so, will be a decided advance in the management of diabetics on the low-maintenance and under-nourishment regimes. It would seem then that insulin offers the diabetic the opportunity to increase his weight, without running the risk of fruther weakening his carbohydrate mechanism.

Scalp-Skin-Nails Symptoms

Symptoms of the scalp, skin and nails are indeed definitely benefited and healed by the use of insulin. Dryness and itching of the scalp and skin yield to insulin. Eczema and pruritus, boils and carbuncles, hang nails, and ulcers in the scalp—conditions that have annoyed the patient for years—yield to the adequate and carefully controlled administration of insulin. One of our cases had suffered for years with rodent ulcers of the scalp which had denuded areas of the scalp of hair the size of a dime. The administration of forty units of insulin daily brought his blood sugar from 460 milligrams of blood sugar per 100 c.c. of blood to 160 milligrams of blood sugar per 100 c.c. of blood and with a complete cure of the ulcers and the formation of cicatrical tissue.

Diabetic Acidosis and Coma

We must remember that the acidosis of diabetes, unlike that of nephritis, is due to the formation of aceto-acetic and beta-oxybutyric acid in the tissues and body fluids as a result of a faulty fat metabolism. The faulty fat metabolism is the result of the effort of the body to employ fat as a substitute. As complete combustion of fat is dependent upon a "flame of burning sugar," and as in diabetes this necessary bed of burning sugar in the body furnace is very dull, and sometimes all but "out," the effort to use the substitute fat fuel is attended by the smoke of incomplete combustion.

From this condition, ketone bodies show in the urine of the diabetic and indicate that the patient is in a state of acid poisoning. This is the forerunner and ultimately the cause of diabetic coma. In our patients who have shown the presence of an excess of ketone bodies, the use of insulin was attended by prompt improvement. Two of our cases gave evidences of profound acid poisoning. A woman of 65 years was in profound coma with marked ketonuria and a blood sugar of 580 milligrams of blood sugar per 100 c.c. of

blood. The patient's blood sugar fell in the course of two days to 360 milligrams per 100 c.c. of blood. The dose of insulin used in this case was large and repeated every hour. The patient received also the usual water and fruit juice treatment.

In another case of beginning coma, the patient responded to insulin, fruit juice, water treatment. The ketones disappeared from the urine, the bad mental symptoms disappeared, and the patient quickly showed sugar free urine.

In the milder cases of diabetes with ketonuria, the patient may be prepared for dietary treatment by a temporary insulin treatment. Such patients, with the careful use of insulin, may become free of acidosis, and the maintenance diet required for the patient may be more quickly learned. It is probably not an overstatement to say that, in this phase of diabetes (ketosis and coma) insulin exerts its most spectacular power. For this dangerous condition, the physician now possesses in insulin an antidote of a definite potency, it seems.

Finally, upon all the cardinal symptoms of diabetes in man insulin exerts an immediately favorable influence for short period of time. To remove the symptoms of diabetes altogether and permanently to rid the diabetic body of the harassing symptoms that characterize the disease, it is necessary to inject into the body at intervals certain unit doses of this potent extract of the pancreas, and to restrict the introduction into the diabetic body of carbohydrate food, and to adjust this restriction in connection with the fat and protein of the diet, with a view to meeting the requirements of the nitrogen balance, ketogenic—antiketogenic balance, and total (caloric) body needs.

News Notes

Commencement Exercises of Virginia Medical Schools

Brought with them this year, as in the past, mingled joy and sorrow for the fulfillment of aims and ambitions and because it was the parting of the ways to those who have been closely associated for several years. However, an opportunity for the renewal of these relations is to be had through medical societies and, for this purpose, if no other, we wish to emphasize the need of all members of the graduating classes affiliating themselves with the county and State organizations in the communities in which they locate.

Medical College of Virginia

Exercises commenced Saturday the 2nd, with a ministrel show by the students in John Marshall High School Auditorium. On Sunday, Rev. Fred R. Chenault, D. D., of Broad Street Methodist Church, delivered the baccalaureate sermon. Alumni day was observed on Monday, June 4. Dr. Manfred Call, Richmond, presiding and a reunion dinner was held at Commonwealth Club that evening. At the meeting of the alumni it was planned to have a drive to raise $3,000,000 for a proper expansion of the school. A part of this is to be raised for immediate uses.

At the meeting of the Board of Visitors on the same day, Dr. St. George T. Grinnan, acting professor of pediatrics, was elected to fill the vacancy caused by the death of Dr. McGuire Newton. Dr. Grinnan will take up his duties in this new position at the opening of the school in September.

A business meeting of the General Alumni Association was held on Tuesday morning, the 5th, and this was followed by a luncheon in the College building.

Commencement exercises at Strand Theatre, on the evening of the 5th, were followed by a reception and dance at Commonwealth Club, in honor of the graduates in medicine, dentistry, pharmacy and nursing. There were 43 graduates in medicine, 36 in dental surgery, 34 in pharmacy, and 9 in nursing—the largest number of graduates from the Medical College of Virginia since 1913.

Hospital appointments are as follows:

Memorial Hospital, Richmond—Drs. Rowland H. Edwards, Palls; John A. Mease, Jr., Sandy Level; Louis Perlin, Richmond; Lee S. Liggan, Richmond; Leta J. White, Greenwood, S. C.; Cornelia W. Segar, Hampton; Joseph P. Treccise, Butler, Pa.

Johnston-Willis Sanatorium, Richmond—Drs. Bolling J. Atkinson, Champe, and William P. Bittinger, Gerrardstown, W. Va.

Retreat for the Sick, Richmond—Drs. Percy R. Fox, Penola; Samuel P. Hileman, Rockbridge Baths; Henry H. Menzies, Richmond.

Stuart Circle Hospital, Richmond—Drs. Emerson M. Babb, Ivor; Earnest M. Wilkinson, McKenney, and undergraduate R. B. Groves.

St. Luke's Hospital, Richmond—Drs. Joseph T. Graham, Draper, and Rogers N. Harris, Whites.

Pine Camp Hospital, Richmond—Dr. Francis J. Clements, Cartersville, and undergraduate H. T. Garriss.

City Home Hospital, Richmond—Undergraduates F. Norman Bowles, G. T. Colvard and W. F. Matthews.

Mercy Hospital, Baltimore, Md.—Dr. Robert R. Jones, Walnut Cove, N. C.

Long Island Hospital, Boston, Mass.—Dr. Churchill Robertson, Salem.

C. & O. Hospital, Clifton Forge, Va.—Dr. Robert P. Hawkins, Jr., Clifton Forge.

Pittman Hospital, Fayetteville, N. C.—Dr. John N. Robertson, Charlotte C. H.

St. Francis Hospital, Jersey City, N. J.—Drs. Wyatt S. Beazley, Jr., Richmond; Sam R. Cozart, Stem, N. C.; Homer B. Luttrell, Amissville.

Elizabeth Buxton Hospital, Newport News, Va.—Dr. Waverly Randolph Payne, Midlothian.

City Hospital, New York City—Drs. Fielding Combs, Honaker, and Joseph E. Burns, Goldston, N. C.

Gouverneur Hospital, New York City—Dr. Phil H. Neal, South Boston.

Lenox Hill Hospital, New York City—Dr. William I. Owens, Richmond.

Northwestern General Hospital, Philadelphia—Dr. Clarence E. Perkins, Newport News.

Philadelphia General Hospital, Philadelphia—Dr. Edwin R. Mickle, Nathalie.

Muhlenberg Hospital, Plain Field, N. J.—Dr. Benjamin E. Glass, Carteret, N. J.

The other graduates in the School of Medicine are:

Benjamin F. Bailey, Ft. Defiance.
William H. Batte, Jr., Jarratt.
John G. Davis, Jr., Roanoke.
Houston L. Gwynn, Yanceyville, N. C.
Frank E. Handy, Emory.
Humie Z. L. Horton, Apex, N. C.
Robert S. Kyle, Woodlawn.
John P. Lilly, Athens, W. Va.
John W. McNabb, Belleville, Pa.
Harry T. Schiefelbein, New Lisbon, Wis.
Archer A. Wilson, News Ferry.

University of Virginia.

Commencement exercises at the University of Virginia began on Sunday, June 10, with the Baccalaureate Sermon by the Rev. Walter William Moore, President of the Union Theological Seminary, Richmond, Va. The graduating class, including the Doctors of Medicine, attended this exercise in a body in academic costume.

At 7:30 p. m. on the same day, there was an organ recital in the McIntire Theatre by Mr. Henry H. Freeman, Director of St. Paul's Choir, Washington, D. C., assisted by Elizabeth Bernadine Thornberry, Soprano.

On Monday, June 11, Departmental Alumni Meetings were held in Peabody Hall at 9:30. Dean Hough outlined the growth of the Medical School during the past fifteen years and the plans for its future development.

These departmental meetings were followed by the Annual Alumni Meeting in Peabody Hall at 11, and this meeting was followed by the Alumni luncheon at the University Commons, the alumni orator being the Hon. Mendel L. Smith.

At 8:15 p. m. the Phi Beta Kappa address was delivered in Madison Hall by the Rev. Beverley Dandridge Tucker, Jr., of St. Paul's P. E. Church, Richmond, Va. On this occasion the Phi Beta Kappa keys were delivered to the initiates of this session. Among these initiates were the following members of the graduating class in medicine:

Vincent W. Archer, Monroe J. Epting, Robert B. Hiden, John P. Williams.

Other members of the graduating class who had previously been initiated into Phi Beta Kappa upon graduating from the college were:

Eugene L. Lowenberg and Caldwell J. Stuart.

Six members of the graduating class had also been initiated on April 12, into the honor medical society, Alpha Omega Alpha, as follows:

Silas E. Chambers, Monroe J. Epting, Robert B. Hiden, Eugene L. Lowenberg, Caldwell J. Stuart, John Powell Williams.

On Tuesday, June 12 at 10 a. m. the graduating classes of all departments joined in the class exercises held in the McIntire Theatre, and at 5 p. m. the final exercises and conferring of degrees took place. The graduating class was addressed by Mr. Homer S. Cummings, of Stamford, Conn. The names of the graduating class are given below. These exercises were followed at 7 p. m. by a reception

to the graduates, their relatives and guests in Madison Hall.

In addition to these exercises, a number of atheletic and social events were held. On Saturday afternoon, June 9, was the Varsity-Alumni baseball game, and on the afternoon of Monday, June 11, there was a game between the University of North Carolina and Virginia. Both of these were played on Lambeth Field.

The Alumni Ball was held on the evening of Monday, June 11, and the Final Ball on Tuesday, June 12. The graduates in medicine with their hospital appointments are as follows:

V. W. Archer, B. S., Black Mountain, N. C., Roentgenologist, Black Mountain Sanitarium, Black Mountain, N. C.

Walter Weyman Benton, Winder, Ga., Ancon Hospital, Ancon, Canal Zone.

Launcelot Minor Blackford, B. S., University, Va., Union Memorial Hospital, Baltimore, Md.

Louis Christian Brand, Staunton, Va., University of Virginia Hospital, University, Va.

Albert A. Creecy, B. S., in Medicine, Norfolk, Va., Sarah Leigh Hospital, Norfolk, Va.

E. P. Cardwell, Wilmington, N. C., Orange Memorial Hospital, Orange, N. J.

S. E. Chambers, Basic, Va., Mercy Hospital, Baltimore, Md.

Samuel Wesley Eason, B. A., Norfolk, Va., Jersey City Hospital, Jersey City, N. J.

Monroe Jacob Epting, Jr., B. A., Savannah, Ga., St. Luke's Hospital, New York City, N. Y.

Richard T. Ergenbright, Charlottesville, Va., Worcester City Hospital, Worcester, Mass.

Richard Dulany Gill, Leesburg, Va., University of Virginia Hospital, University, Va.

William H. Glass, Gainesville, Fla., Orange Memorial Hospital, Orange, N. J.

Robert B. Hiden, A. B., Pungoteague, Va., Instructor in Physiology and Biochemistry for 1923-24, University of Virginia.

Clack D. Hopkins, Richmond, Va., Flushing Hospital, New York City, N. Y.

W. B. Hubbard, Broadway, Va., Instructor in Anatomy for 1923-24, University of Virginia.

Charles I. Johnson, B. S., Montgomery, Ala., Kenmont Coal Co., Jeff, Ky.

Thomas Duckett Jones, B. A., Petersburg, Va., University of Virginia Hospital, University, Va.

Eugene Lowenberg, B. S., Norfolk, Va., Lenox Hill Hospital, New York City, N. Y.

Ray Jackson Neff, B. A., Chilhowie, Va., University of Virginia Hospital, University, Va.

H. Lamont Pugh, Crozet, Va., U. S. Navy.

Willard G. Rainey, Greensboro, N. C., St. Elizabeth's Hospital, Richmond, Va.

Samuel Harvey Rivers, B. A., Dryden, Va., University of Virginia Hospital, University, Va.

C. J. Stuart, B. A., Washington, Va., U. S. Navy.

Charles W. Scott, Port Republic, Va., University of Virginia Hospital, University, Va.

Richard Green Waterhouse, B. A., Emory, Va., St. Elizabeth's Hospital, Richmond, Va.

William Weston, Jr., B. A., Columbia, S. C., Johns Hopkins Hospital, Baltimore, Md.

John Powell Williams, B. A., Richmond, Va., St. Luke's Hospital, New York City, N. Y.

States Advance in Safeguarding Health of Working Children.

Twenty-two States now require the physical examination of every child applying for an employment certificate, according to the newly revised edition of a bulletin on "Physical Standards for Working Children," issued by the U. S. Department of Labor through the Children's Bureau. The bulletin contains the recommendations of a committee of physicians who were appointed by the Bureau to prepare a standard form for use in examination of children seeking to enter employment.

Since the publication of the first edition of the bulletin, two years ago, a considerable number of changes have been made in the various State laws with reference to such examinations, and the summary of legal provisions which it contains has now been brought up to date. One State, Virginia, is said to have advanced in this respect to a stage beyond that of the other States, in that it now requires the examination of every working child at regular intervals during the years when he is especially susceptible to the strains of industry. It should thus be possible to determine whether the work at which he is engaged is injuring his health or interfering with his normal development. In certain other States a child must be re-examined when he goes from one employer to another, but since he may remain with his first employer until

he passes the certificate age, the bulletin points out that this is not so adequate a provision as the new Virginia law.

In addition to the twenty-two States requiring a physical examination for every child before an employment certificate is first granted, eight others and the District of Columbia allow the certificate-issuing officer to require an examination when he is in doubt as to the child's physical fitness, but many officers, it is said, do not realize the importance of this phase of their work. In eighteen States there is still no legal provision of any kind for examination, even when a child first enters enmployment.

Age Old Quackery Still in Use.

As several cases have recently come to the attention of the State Bacteriological Laboratory where persons bitten by mad dogs had resorted to the mad stone for cure instead of taking Pasteur treatment, A. H. Straus, director of the State laboratory, applied to the Attorney-General of the State for an interpretation of the law as to whether people applying the mad stone for pay could be prosecuted under the Medical Practice Act, for practicing medicine without a license. Attorney-General Saunders gives the following opinion:

"After examining Section 1622 of the Code of 1919, I am of the opinion that any person who attempts to cure the bite of a mad dog by the use of a mad stone, for compensation, is engaged in the practice of medicine within the definition found in this section of the Code, and that in all such cases, where the person is not a licensed practitioner, you should report the facts to the attorney for the Commonwealth of the county in which such offense occurs, with the request that the party be prosecuted."

In view of the above, we would suggest that if any of our readers know of cases where the mad stone is applied for compensation, they report name of person using it to this office that the Medical Society of Virginia may assist the Medical Examining Board of Virginia in prosecuting such person.

Memorial to Dr. McGuire Newton.

A number of the friends and admirers of the late Dr. McGuire Newton, noted child specialist of Richmond, have secured a charter for the McGuire Newton Foundation. It is the purpose of this Foundation to create a $100,000 children's clinic in Richmond, as a memorial to Dr. Newton, which will be known as the McGuire Newton Memorial Clinic. To assure the permanency of the Clinic, which is to be operated exclusively for the treatment of children's diseases, it is provided that only the income from the endowment can be used in maintaining the Clinic, and, in case of the resignation or death of any member of the board of trustees, of the Foundation, his or her successor is to be named by the board of trustees, which is to have sole power in the administration of the funds. H. W. Ellerson is chairman of the Foundation, and temporary offices are at 1010 Floyd Avenue, this city, the former home and offices of Dr. Newton.

The new class formed at the spring reunion of the Ancient and Accepted Scottish Rite Masonry, the day of Dr. Newton's funeral, took the name of "McGuire Newton Class." This name was adopted in honor of Dr. Newton and symbolizes the work which this class will do toward the relief of crippled children, a movement which the Scottish rite has long fostered.

Dr. Charles A. Young,

Formerly House Surgeon of the Wills Eye Hospital of Philadelphia, is now located in Roanoke, Va., with offices at 612-614 MacBain Building.

Dr. W. V. Atkins,

Blackstone, Va., was called to Front Royal, Va., the first of this month on account of the illness of his granddaughter.

Results of T. B. Seal Sales.

Salem led all the cities in the State of Virginia in the per capita sale of Christmas Seals during the last campaign with a per capita sale amounting to over 13 cents. Petersburg, the second city, had a per capita sale of nearly 10 cents. In county sales, Henrico won first place with a per capita sale of 4 cents.

In Virginia 63 counties increased the amount of their sales over the past year. Some of the larger cities, however, showed a decrease.

The Virginia Tuberculosis Association has received to date the sum of $55,045.56 from the sale of Seals with $200 yet to be transmitted. The sale will exceed that of last year by about $1,000. Out of the sum raised, $36,543.28 will be distributed to the counties and cities for local tuberculosis work, $15,750 going to the Virginia Tuberculosis Association and $2,752.28, representing 5 per cent. of the

gross proceeds, going to the National Association.

The Virginia Pharmaceutical Association

Is to hold its annual meeting at Virginia Beach, June 25, 26 and 27. H. E. Orchard, of Lynchburg, is president, and A. L. I. Winne, of Richmond, secretary.

High Rate of T. B. in Porto Rico.

Dr. J. G. Townsend, of the U. S. Public Health Service, who recently returned to this country after a five months' study of tuberculosis in Porto Rico, states that there is a high tuberculosis death rate in this island. The rate is a little more than 200 per hundred thousand, which is greater than in any State in the Union except Colorado, where the tuberculosis death rate is enormously increased by the constant immigration of tuberculous patients, many in the last stages of the disease. The high rate in Porto Rico is especially among the laboring class and is largely due to the housing and diet conditions under which they live.

Dr. Charles K. Mills,

Philadelphia, was elected president of the American Neurological Association, at its meeting in Boston, early this month. He will preside at the jubilee celebration in Philadelphia, next year, on the occasion of the fiftieth anniversary of the society.

Cost of Operating a Ford.

Tabulations as to the cost of operating a Ford car have just been completed by the State Board of Health, which has since May 1, 1919, been using Fords in its rural sanitation work through Virginia. Excluding garage rent and depreciation, it is seen that the average driver, a man normally careful, can at this time expect to run his Ford over *country* roads, taking the good with the bad and encountering all kinds of weather, at a cost not to exceed $35 a month, if he has a mileage of approximately 900. Gasoline and oil account for about one-half the total upkeep, the remainder, slightly under fifty per cent, being chargeable to repairs, tubes and tires.

Dr. S. E. Massey,

Recently of Martinsville, Va., has located in Roanoke, Va., with offices in Anchor Building. He will limit his work to diseases of the eye, ear, nose and throat.

Dr. Claude M. Lee

And family are spending the month of June with relatives in Culpeper, Va., before sailing for their home in Wusih, China, where Dr. Lee is a medical missionary.

Married.

Dr. William Benjamin Hopkins, Richmond, Va., and Miss Mary Conrad Nicholson, Littleton, N. C., May 6.

Dr. Oscar Bruton Darden, Richmond, Va., and Miss Mary Wyckoff Dunlap, Dunlap, N. C., June 12.

Fresh Air Camp for Crippled Children.

Westhampton College buildings, belonging to the University of Richmond, have been offered to and accepted by a committee in charge of securing quarters for a fresh air camp for the crippled children of Richmond during the summer months. Funds are to be raised by the various committees for the maintenance of the camp during this time.

Dr. William R. Aylett,

Of Newport News, Va., who was recently quite sick at St. Elizabeth's Hospital, Richmond, is now much improved and has returned home.

Dr. William Banner Moore,

Member of the Medical Society of Virginia, for sometime located at Smith, N. C., has moved to Browns Summit, N. C.

Dr. Tom A. Williams,

Washington, D. C., was an invited guest at the meeting of the New York State Medical Society in New York City, May 23rd. The subject of his address was "Besetting and Other Morbid Fears," on which subject he has just published a book.

Work of the Rockefeller Foundation.

On May 14, the Rockefeller Foundation passed the ten-year milestone in its work. Though its chartered purpose, broadly stated, was "the well-being of mankind throughout the world," the work of the Foundation has become chiefly centered upon public health and medical education. The expenditures for the first decade have amounted to $76,757,040, roughly divided as follows:

Public Health	$18,188,838
Medical Education	24,716,859
War Relief	22,298,541
All Other Philanthropic Work	10,445,628
Administration	1,107,174

Contributions outside the field of public health and medical education were made, for the most part, during the war and during the earlier years of the Foundation's work, before its policies and program had become clearly defined. There has been an increasing concentration upon medical education and public health.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examination for reconstruction aide (physiotherapy) and reconstruction pupil aide (physiotherapy), applications to be rated as received, until further notice. Vacancies are to be filled in the Public Health Service and Veterans' Bureau throughout the United States. Competitors will not be required to report for examination at any place, but will be rated on their physical ability, and education, training and experience. For full information and blanks, apply to the above named commission or the secretary of the board of U. S. Civil Service Examiners at the post-office or custom house in any city.

Dr. B. B. McCluer,

Speedwell, Va., recently visited his parents at Bon Air, Va.

Dr. Lester A. Crowell,

Lincolnton, N. C., was elected president of the North Carolina Hospital Association at its recent meeting in Asheville.

Dr. Margaret P. Kuyk,

Richmond, after attending the A. M. A. meeting in San Francisco, this month, will go on to Portland, Ore., for the meeting of the American Association of University Women, to be held there in July.

Dr. D. A. Stanton,

High Point, N. C., has been appointed a member of the N. C. State Board of Health, to fill the unexpired term of Dr. Fletcher R. Harris, Henderson, resigned.

Dr. D. W. Draper,

Of Newport News, Va., is spending sometime in Philadelphia, doing post-graduate work in pediatrics.

Dr. Walter E. Dandy,

Of Johns Hopkins Hospital, Baltimore, by invitation delivered an address before the Norfolk County (Va.) Medical Society, his subject being "The Localization of Brain Tumors by Air Injections in the Brain."

Dr. Charles R. Robins,

Richmond, was appointed one of the delegates to represent the Society of the Sons of the Revolution in the State of Virginia at the triennial meeting of the General Society of Sons of the Revolution in Boston, June 18 and 19.

Dr. F. O. Plunkett

Has been elected president of the Men's Club of Court Street Methodist Church, Lynchburg, Va.

Officers in the Society of Colonial Wars.

At the annual election of officers of the Society of Colonial Wars of the State of Virginia, held in Richmond, the middle of May, Dr. Alexander G. Brown, Jr., was elected surgeon, and Drs. Francis Whittle Upshur and J. Shelton Horsley gentlemen of the council.

Dr. Roshier W. Miller

Has been re-elected a member of the City School Board of Richmond.

Dr. Benjamin Carroll Henson,

Roda, Va., has been attending the Trudeau School of Tuberculosis, at Saranac Lake, N. Y., but will return home the first of July.

Dr. C. L. Bailey,

After practising for twenty-one years at Quinton, Va., has located at Sandston, Richmond, R. F. D. 3, Va.

Dr. H. T. Hopewell,

Strasburg, Va., who recently suffered a stroke of paralysis, has sufficiently recovered to be at his work again.

Dr. and Mrs. J. W. Holmes,

Pulaski, Va., have been on a visit to their son at Kenova, W. Va.

Miss Loula L. Odom, R. N.,

Superintendent of Sarah Leigh Hospital, Norfolk, Va., has been appointed by the Governor as a member of the State Examining Board for Nurses, succeeding Miss Elizabeth Harrison Webb, of Richmond. The appointment is for a term of four years.

Dr. E. T. Trice

Has returned to his home in Richmond, after a visit to Rochester, Minn.

Dr. C. W. Massie,

Of this city, who has been quite ill at St. Luke's Hospital, Richmond, is now much improved.

Dr. Harry B. Taylor,

A graduate of the Medical Department of the University of Virginia and president of the class of 1902, recently delivered an address in this city, on "Medical Missions in China." After graduating, Dr. Taylor spent several years in hospital training, following which he went to China as a medical missionary under the Episcopal church. He is in charge of St. James Hospital, Anking, China.

Appointments in National Guard of Virginia.

Dr. Herbert R. Drewry, Norfolk, who served as captain with the medical corps in the Twenty-ninth Division in France, has been made major and assigned to the medical corps of the 111th Field Artillery.

Dr. Harry M. White, of Fishersville, Va., who also served with the rank of captain in the Twenty-ninth Division, has been appointed major and assigned to the 116th Infantry.

Major Henbert R. Drewry and Captain Harry W. Boice, both of Norfolk, have been elected medical officers of the 111th Field Artillery, and Captain Walter E. Miler, also of Norfolk, Staff dentist.

Dr. R. H. Woolling,

Pulaski, Va., has recovered from a recent illness. He spent several weeks recuperating at his former home in Fluvanna County, Va.

Dr. W. T. Graham,

Richmond, has been appointed by Governor Trinkle as a member of the State Board of Health, to fill the vacancy caused by the death of Dr. McGuire Newton. Dr. Newton's work was with particular reference to children, and Dr. Graham will continue that line of work as a member of the Board.

Dr. John R. Blair,

For many years a resident of Church Hill, Richmond, has sold his home and will shortly move to Ginter Park, this city.

Dr. and Mrs. C. W. Astrop,

Of Surry, Va., were recent visitors near Fork Union, Va.

Dr. Robert Whitehead,

Meherrin, Va., who recently underwent an operation for appendicitis, returned to his work in May, after spending sometime recuperating at his father's home in Amherst, Va.

Delegates to Social Workers' Conference.

Drs. R. L. Raiford, Sedley, and P. K. Graybill, Fincastle, were among the delegates appointed by the Governor to represent Virginia at the annual meeting of the National Conference of Social Workers in Washington, in May.

Experimental Laboratory Destroyed by Fire.

Fire of undetermined origin recently destroyed the new animal experimental laboratory on the estate of Dr. C. H. Mayo, three miles south of Rochester, Minn. The loss was estimated at $150,000.

Dr. Paul E. Redd,

Of Richmond, recently paid a short visit to Mathews County, Va.

Dr. L. K. Leake,

East Leake, Va., has been elected a member of the board of directors of the State Bank of Goochland, which was recently organized in that County.

Elected Members of The Raven Society.

The middle of May, Dr. D. C. Smith, instructor of dermatology at the University of Virginia and the following students from the Department of Medicine were among those initiated as members of the Raven Society at the University: Frederic G. Dorwart, Newport News, Va., Luther W. Kelly, University, Va., Winston U. Rutledge, Anchorage, Ky., and John Powell Williams, Richmond, Va.

The Richmond Chapter, Alumni Medical College of Virginia,

At a meeting held recently, elected Dr. Manfred Call president, for the ensuing year; Elam C. Toone vice-president; Dr. Harry Bear secretary; and Dr. Frank S. Johns treasurer.

Dr. and Mrs. James Bordley,

Baltimore, Md., were recent visitors at the home of friends in Winchester, Va.

The Community Hospital

Will be opened at Greenville, N. C., September 1. It will be in charge of Dr. E. T. Dickinson, formerly in charge of Wilson (N. C.) Sanatorium. The last named institution was closed the first of June.

Crippled Children's Hospital at Shreveport.

The Shrine Hospital for Crippled Children,

at Shreveport, La., was dedicated in April. This was erected at a cost of $300,000.

The N. C. Public Health Association,

At its annual meeting in Asheville recently, elected Dr. Charles W. Armstrong, of Salibury, president, and re-elected Dr. Frank M. Register, of Raleigh, secretary.

Dr. G. F. Simpson,

Purcellville, Va., with a party of friends, motored to Harrisonburg, Va., and attended the Shriner's meeting held in that place on June 1.

Dr. Thomas M. Winn,

After a year's service at Physician's and Surgeon's Hospital, Wilmington, Delaware, has located at Millboro, Va. Dr. Winn, formerly of Palmyra, Va., graduated from the Medical College of Virginia last June.

Dr. W. B. Carr,

Recently of Warrenton, Va., has a position on a Fruit Boat between Brazil and New York City.

The Medical and Chirurgical Faculty of Maryland,

At a recent meeting, elected Dr. Philip Briscoe, of Mutual, Md., president, and Dr. Joseph A. Chatard, Baltimore, secretary.

Dr. Thomas A. Groover,

Associate professor of roentgenology at George Washington University Medical School, Washington, D. C., recently had his left hand and two fingers on his right hand amputated, owing to extended exposure to the roentgen rays.

Dr. Henry A. Christian,

Physician-in-chief at Peter Bent Brigham Hospital, Boston, by invitation, delivered an address before the Alumni Society of Randolph Macon College, Ashland, during commencement week, his subject being "Public Health Problems of Virginia." Dr. Christian is an alumnus of Randolph Macon College.

St. Luke's Hospital to be Enlarged.

The management of St. Luke's Hospital, Richmond, expects shortly to enlarge that institution and make a number of changes for the greater good of the hospital. To this end, the three residences just west of the hospital on Grace Street have been purchased.

Members of N. C. State Board of Health.

Drs. J. Howell Way, Waynesville, and A. J. Crowell, Charlotte, have been reappointed by the Governor as members of the N. C. State Board of Health for a period of six years.

Dr. C. B. Crute,

Farmville, Va., last month assisted in Powhatan County in holding chest clinics, under the auspices of the Tuberculosis Association.

Dr. Roy K. Flannagan,

Richmond, represented the Virginia State Health Department at the thirty-eighth annual conference of State and Provincial Health Authorities of North America, which convened in Washington, last month.

Dr. L. H. Apperson,

Who has been practicing roentgenology in Danville, Va., early this month moved to Petersburg, Va., where he is associated with Dr. Wright Clarkson in the same specialty.

Dr. Paul C. Brittle

Has moved from Conway, N. C., to Burlington, N. C. Dr. Brittle is a member of the class of '07, of the former University College of Medicine, Richmond.

Dr. J. Rainey Parker Honored.

Elon College, N. C., at its commencement this year, conferred upon Dr. J. Rainey Parker, Burlington, N. C., the honorary degree of LL. D., in recognition of the work he has done in Alamance County as a surgeon and citizen. He is head of the Rainey Hospital in Burlington and has been doing a big work there.

Dr. Parker has many friends among our readers as he was a former student in Richmond, having graduated from the University College of Medicine in 1901.

Dr. and Mrs. J. Allison Hodges,

Richmond, are leaving the middle of this month to attend the A. M. A. convention in San Francisco. They will be away for about five weeks during which time they will visit many places of interest in the West.

The Alonzo Myers Orthopedic Clinic, Inc.

Dr. Alonzo Myers announces the association with him in the practice of orthopedic surgery of Dr. J. Stuart Gaul, recently of Walter Reed General Hospital. They opened a clinic the middle of May, at 8 West Seventh Street.

Charlotte, N. C., which is known as The Alonzo Myers Orthopedic Clinic, Inc. This has complete departments of physiotherapy, brace making and fitting, and orthopedic equipment.

May Have Health Station for Mothers and Children in Virginia.

Representatives of the American Child Health Association recently spent several days at Charlottesville and the University of Virginia, in an inspection which may lead to the location of a demonstration station for health work among mothers and children. This Association, with headquarters in Washington, has already established two stations, and they propose to establish a third in the Southern States. Virginia is very anxious to have this one.

Roanoke Meeting, Medical Society of Virginia.

Under the heading of "State Society News," in this issue, we give information about the golf tournament to be held on the 16th of October, and also the names of Roanoke hotels, with their rates.

Begin now to make your plans to attend this meeting. The dates are October 16, 17, 18 and 19, a lovely season of the year, and the meeting promises many interesting features. To add to the success of the meeting, we want the interest and attendance of every member of the Society.

Hospital Buyer,

Which started publication last Fall, is devoted to all departments of hospital buying and should be of interest to those engaged in this work, as it conforms to the highest standards demanded.

The San Francisco Meeting.

If preparing to attend the American Medical Association in San Francisco, June 25-29, do not fail to carry your blue fellowship card. General headquarters, registration and information bureaus, all meetings and commercial exhibits will be in the Civic Auditorium. There will also be in this building a branch post-office, so, if you do not know where you will be stopping, you may arrange to have your mail sent you "Care the American Medical Association, Civic Auditorium, San Francisco, California."

Hydatidiform Mole.

A further study of hydatidiform mole has been undertaken at this hospital, especially in regard to the frequency of malignancy following this condition. An attempt is being made to collect case reports from outside physicians. Cases reported by physicians will be greatly appreciated and the physician will be given due credit in any literature published.

Address communications to

ROBERT B. KENNEDY, M. D.,
Chicago Lying-in-Hospital,
Chicago, Ill.

The South Carolina Medical Association,

At its seventy-fifth annual meeting in Charleston, elected Dr. Leland O. Mauldin, Greenville, president, and re-elected Dr. E. A. Hines, Seneca, secretary-treasurer.

The American Laryngological, Rhinological and Otological Society,

At its annual meeting held last month, elected Dr. Hanau W. Loeb, St. Louis, president, and re-elected Dr. William H. Haskin, New York City, secretary.

Doctor!

Do you want to locate in Tennessee? City of 4,000, eighty miles south of Nashville on L. & N. R. R. One of richest counties in State. Want to sell out and quit practice. $4,500 cash to handle. Beautiful home and well-equipped office. Write for particulars to Dr. James A. La Rue, Pulaski, Tenn.

For Sale.

West Virginia village and country practice and residence: prosperous churches, high school with normal training course, bank, three lodges, rich agricultural section, on class A road. Price $5,000; residence alone worth the price. Address No. 264, care this journal.

Wanted.

Physicians (Mental Diseases)—$1,800 to $2,000 a year and institutional maintenance. Apply State Employment Commission, 22 Light Street, Baltimore, Maryland.

Good Location For Sale.

A splendid private hospital containing fifteen rooms and fully equipped with all modern conveniences. This property is beautifully located, fronting Lee Highway, in the new residential section of Christiansburg, Va. Will sell at a reasonable price and on easy terms. If interested, apply for further particulars to W. L. Pierce, Agent, Christiansburg, Va. (Adv.)

Obituary

Dr. William Beauregard Ashburn,

South Norfolk, Va., died at his home in that place May 17, at the age of 61 years. Dr. Ashburn studied medicine at the Medical College of Virginia, from which he graduated in 1889. He had been health officer for Berkley and South Norfolk as well as for a time physician to the county almshouse. At the time of his death he was physician to the relief association maintained in Berkley for the benefit of employees of the Virginia Railway and Power Company. Dr. Ashburn was a member of the Norfolk County Medical Society and of the Medical Society of Virginia. He is survived by his wife and two sons, one of them Dr. Horace G. Ashburn of South Norfolk.

Dr. Samuel Saunders, Jr.,

A former resident of this State, died in Binghamton, N. Y., May 8. He was 36 years of age and studied medicine at the University of Virginia, from which he graduated in 1915, at which time he was appointed an interne at University Hospital. Later he entered the U. S. Public Health Service and at the time of his death was a member of the staff of the Binghamton State Hospital. Dr. Saunders' death was due to a relapse following a severe attack of influenza. Within twelve hours after his death, his mother died at her home at University, Va., and the interment of mother and son occurred simultaneously in Washington, D. C.

Dr. Saunders is survived by his wife, formerly Miss Nan Harding, a graduate of the Training School at University Hospital, a small daughter, and two sisters.

Resolutions on Death of Dr. McGuire Newton.

The following was adopted at a meeting of the Richmond Academy of Medicine and Surgery held on May 8, 1923:

Be it Resolved, That in the death of McGuire Newton, the Richmond Academy of Medicine and Surgery has lost one of its foremost members.

The profession of this city and State has lost its leading pediatrician; and the people a friend whose loyalty was sublime, and a citizen whose value was immeasurable; a unique character—wise, generous, fearless, rigidly honest; a man to whom the word "duty" was all but a religion.

He gave unstintingly of himself to the mothers and children of this community, and reaped a rich reward in undying affection and deep appreciation. He has left behind the memory of a life that all might do well to emulate; and his loss will long be keenly felt among us. Be it further

Resolved, That these resolutions be spread upon the minutes of this body, that a copy be sent to his family, and that they be published in the VIRGINIA MEDICAL MONTHLY.

J. G. NELSON,
W. L. PEPLE,
A. L. GRAY,
Committee.

The following resolutions were adopted at a meeting of the Medical Faculty of the Medical College of Virginia, Richmond, at a meeting held May 17, 1923:

WHEREAS, The Medical Faculty of the Medical College of Virginia has lost in the death of Doctor McGuire Newton one of its most valued and beloved members. Therefore, be it

RESOLVED, That we, the Medical Faculty of the Medical College of Virginia, feel with deep regret the death of our colleague and friend, Doctor McGuire Newton, whose long, efficient and faithful service to the College, to the children's wards of the hospitals and to the children of the city and State will be missed for years to come. His frank and true personality, his unfailing sense of duty, his great intelligence, his untiring endeavors, his loving kindness in his contact with his little patients and the confidence he instilled in the parents have made him one of the most beloved physicians that has ever lived in Richmond and will leave an enduring impression upon this whole section of the South. For these things and other sterling qualities, we shall miss him in our counsels, in our practice and among us as a friend and advisor. Therefore, be it further

RESOLVED, That in presenting these resolutions the Faculty extend to the family of Doctor McGuire Newton their heartfelt sympathy and that a copy of these resolutions be spread upon the minutes of the Faculty, sent to the daily press and published in the Bulletin of the Medical College and the VIRGINIA MEDICAL MONTHLY.

BEVERLEY R. TUCKER,
ROSHIER W. MILLER,
For Committee.